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overview and assessment of archeological resources

october 1986

STATUE OF LIBERTY
ELLIS ISLAND

NATIONAL MONUMENT/ NEW YORK

AN OVERVIEW AND ASSESSMENT
OF
ARCHEOLOGICAL RESOURCES ON ELLIS ISLAND
STATUE OF LIBERTY NATIONAL MONUMENT
NEW YORK

STLI Pkg. No. 107-43

by

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Eastern Team
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October 1986

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PREFACE

The restoration of the U.S. Immigration Station on Ellis Island moved beyond the planning stage during fiscal year 1985 and work requiring ground disturbances and archeological mitigation has necessarily preceded completion of this report. It has not been practical to discuss in the body of this report the specific archeological resources affected by these disturbances, as documented by mitigation, but brief descriptions are provided in an addendum. The more significant of these resources are noted in the "Conclusions and Recommendations" section. The findings of mitigation are generally consistent with the expectations regarding resources outlined below. The relative integrity of a prehistoric shell midden discovered beneath the east wing of the immigration station's main building is nonetheless somewhat surprising, as is its low elevation. Above the midden, situated on the island's original surface, was a large amount of fill, deposited c. 1800 to raise the elevation of the fortifications formerly located at the southeast end of the island. Especially noteworthy was the recovery of human skeletal remains from previously disrupted contexts in the vicinity of the midden. These remains probably reflect prehistoric burials on the island. The on-going program of archeological mitigation at Ellis Island, for which this report provides a basis and justification, is intended to ensure that significant resources are preserved where possible, and documented wherever they are unavoidably affected by construction. Following the completion of mitigation, a separate report will be prepared concerning the resources affected.

ABSTRACT

Review of existing documentation regarding Ellis Island, including historical research reports, plans and other drawings, photographs, and previous engineering and archeological investigations, indicates that significant archeological resources are present in buried contexts on the island. This conclusion is supported by the findings of archeological test excavations at two locations. The resources derive primarily from late eighteenth through mid-nineteenth century military facilities and from the first U.S. Immigration Station on the island (1891-1897). Resources resulting from prehistoric utilization of the island are present and significant despite historical disruption. Resources reflecting early historic activities are likely to be present, but their integrity and significance is uncertain. An archeological survey of the island's surface yielded some artifacts which are significant due to their clear association with the second immigration station (1901-1954), but the general sparsity of artifacts, the prevalence of non-diagnostic architectural artifacts, and the presence of exogenous items taken together suggest that the island's surface lacks significance as an archeological context. It is recommended that archeological mitigation precede or accompany ground disturbances on the island wherever significant resources are likely to be affected.

ACKNOWLEDGEMENTS

I am grateful to all those who aided my preparation of this report. The information concerning Ellis Island which Denver Service Center (DSC) Historian Harlan Unrau gathered and organized has been particularly useful. Equally important has been the support of Doug Comer (DSC/Eastern Team Section Chief for Archeology), Michael Adlerstein (Project Architect for DSC), Jud Ball (the project's Design Section Chief for DSC), Bill Witmer (the Project Manager for DSC), Dick Hsu (Regional Archeologist, North Atlantic Region), and Frank McManamon (Chief, Cultural Resources, North Atlantic Region). Jim Rhodes, with the project's contracted design firm (Beyer Blinder Belle/Anderson Notter Finegold), has provided timely advice and drawings, and has amply demonstrated his concern for the island's archeology. The field work was facilitated by the Assistant Superintendent for the Statue of Liberty National Monument, Kevin Buckley; by the park's Curator, Paul Kinney; and by its Maintenance Supervisor Frank Pellicane. The survey and test excavations were ably made by Cooperative Park Studies Unit (CPSUA) crew-members Seth Gershberg, Pelice Kudmann, Liz Merwin, and Rich Sacchi. Conservation of several of the artifacts collected was admirably done by Julie Reilly, also with the CPSUA. Indispensable, and invaluable, was Valerie King's patient conversion of my scrawl into typescript. I am no less grateful to others, though for brevity's sake they remain unnamed. Any errors in this report are, naturally, mine alone.

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INTRODUCTION

Knowledge of the role which Ellis Island has played in the modern social and demographic history of the United States is part of our common heritage. The island's significance as a cultural resource is consequently generally accepted, and formally recognized by its listing in the National Register of Historic Places. This status requires the National Park Service, in administering the island, to "preserve and protect" its values as a cultural resource. It also requires that basic data be collected and organized so that informed management decisions can be made concerning the resource. The aim of this report, as its name indicates, is to provide basic data regarding the archeological characteristics of Ellis Island, and an assessment of the significance of those characteristics.

A traditional, if somewhat narrow, definition of archeology is assumed in this report. The focus is on artifacts and features buried beneath the surface of the island, or discoverable at its surface using traditional archeological survey techniques. This definition purposely excludes detailed consideration of the many existing buildings on the island, except where their use affected the deposition of artifacts or their construction impinged on previous archeological contexts. The archeological research potential, broadly defined, of these buildings and their contents is significant, but an archeological overview is not an appropriate vehicle for exploration of this potential, especially when an abundance of descriptive and historical information regarding the buildings is available in existing reports. The primary concern of this study is to provide a basis for assessing the potential impact of ground disturbances on archeological resources, and for mitigating those impacts.

Determining what and where archeological resources are on Ellis Island has required a review of existing documentation, especially of historical maps and plans, of photographs, and, most importantly, of existing historical research reports. Because of the comprehensiveness of these reports and because of necessary limitations on the amount of detail which can be encompassed by an overview, I have consulted few primary sources other than maps and photographs. The summarized outcome of this review is provided in the cultural background and archeological potential sections of this report, together with illustrative material.

The goal of this study has also necessitated an archeological survey and test excavations. The survey was aimed at determining the artifactual content of the soil presently at the surface of the island, with the presumption that the content would reflect 20th century activities on the island. The test excavations were intended to document the nature of earlier, subsurface features and artifacts. Descriptions are given below of the specific objectives, methods, and findings of these more purely archeological aspects of data collection.

At the conclusion of this report I summarize the findings of the background research and the field work, and provide a set of recommendations regarding the ongoing management of archeological resources on Ellis Island. I also attempt to provide the criteria which, by indicating the varying significance of these resources, guide the manner in which potential impacts on these resources ought to be mitigated.

The historical significance of Ellis Island has been stated most cogently by Harlan Unrau (1981:1), and I need not reproduce that readily available statement. I must, however, note that the work described in this report, in keeping with the significance of the island, is mandated by the National Historic Preservation Act of 1966, as amended.

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ENVIRONMENTAL BACKGROUND

Geography and Geology

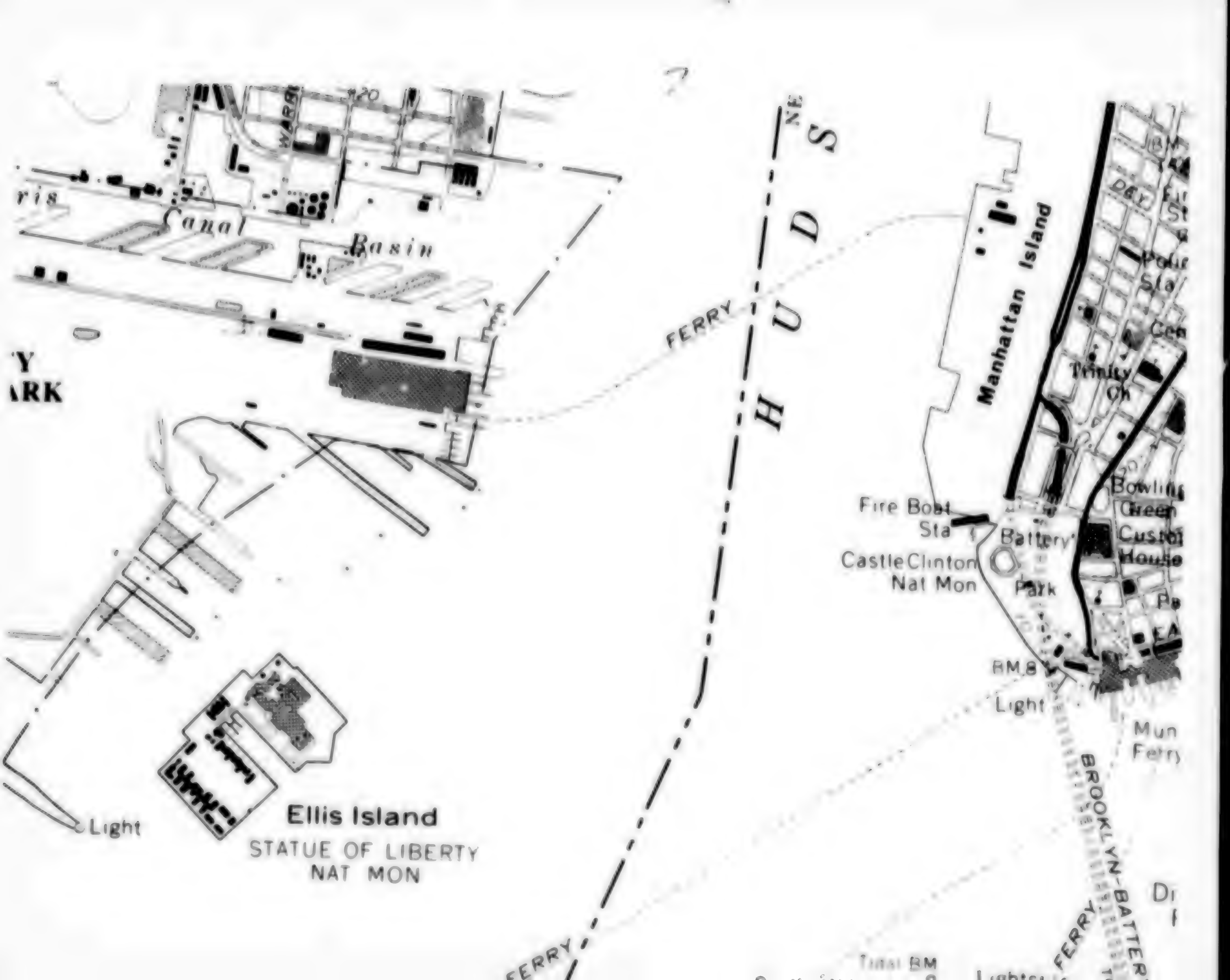
Ellis Island is situated on the west (New Jersey) side of the Hudson River toward the north end of New York Harbor's Upper Bay (see figure 1). It lies a mile and one-half southwest of Manhattan Island and three-quarters of a mile north of Liberty (formerly Bedloe's) Island. New Jersey contests New York's long-standing jurisdiction over the island. The island was originally only about three acres in extent, but modern filling (1890-1935) around and southwest of the original island has enlarged it to about twenty-seven and one-half acres. Its original elevation most likely ranged from 0 to 5 feet above mean sea level (A.M.S.L., 1929 datum), while its present elevation, within the confines of a seawall, ranges from 7 to 11 feet A.M.S.L.

The underwater area surrounding Ellis Island is relatively shallow, except for boat channels established and maintained by dredging and for the deep channel of the Hudson to the east. This shallow area forms a bank stretching west to the New Jersey shore, north toward the Paulus Hook area of Jersey City, and southwest toward Constable Hook in Bayonne. During the nineteenth century, prior to substantial dredging, and to filling at its margins, the bank was 3 to 7 feet below mean low water (Kardas and Larrabee 1976:74, 76). The bank's surface consisted of "mud" together with stones and gravel. The bank formerly supported an abundance of shellfish, and as a consequence Ellis was at one time known as Oyster Island.

Ellis Island evidently derives from a mass of glacial till left at a somewhat higher elevation than the surrounding area following the retreat of the Late Wisconsin period ice sheet, roughly 15,000 years ago (Newman, et al. 1969:566). For a relatively brief period following glacial retreat, ending at most 12,500 years ago, Ellis Island may have been below the level of the glacial Lake Hudson. This lake evidently formed behind the Harbor Hill Terminal Moraine at the Narrows section of the Hudson River estuary, and is estimated to have had a spillway elevation of about 25 feet A.M.S.L. (Newman, et al. 1969:557). After Lake Hudson emptied, with sea level very much lower than at present for a period of several thousand years (due to the amount of water still in ice caps and ice sheets), Ellis would have been a hummock along a plain fronting the west side of the Hudson River estuary.

Depending on the rate of sea level rise, the area around Ellis Island would have become increasingly inundated anywhere from 3,000 to 4,000 years ago. The area was most likely still partially above water at low tide as recently as 1,500 years ago (Kardas and Larrabee 1976:10-12). The twentieth century rate of sea-level rise in New York Harbor of approximately 0.5 feet per 60 years (Wolfe 1977:312-313) is probably more rapid than during the preceding 2,000 years, for which rates of from 0.25 to 0.5 feet per century have been estimated (Kardas and Larrabee 1976:10-11).

Bedrock below Ellis Island, from 20 to more than 30 feet below mean low water, has not been adequately described in any of the engineering test borings made in the vicinity (NPS-DSC Dwg. Nos. 356/43.942:1, 43.961:1, and 43.961A:10). It may consist of Newark Group rocks. These are sandstones, siltstones, and shales of Triassic age which underlie much of northern New Jersey, in many areas beneath the Palisades Sill, an early Jurassic igneous (diabase) intrusion.



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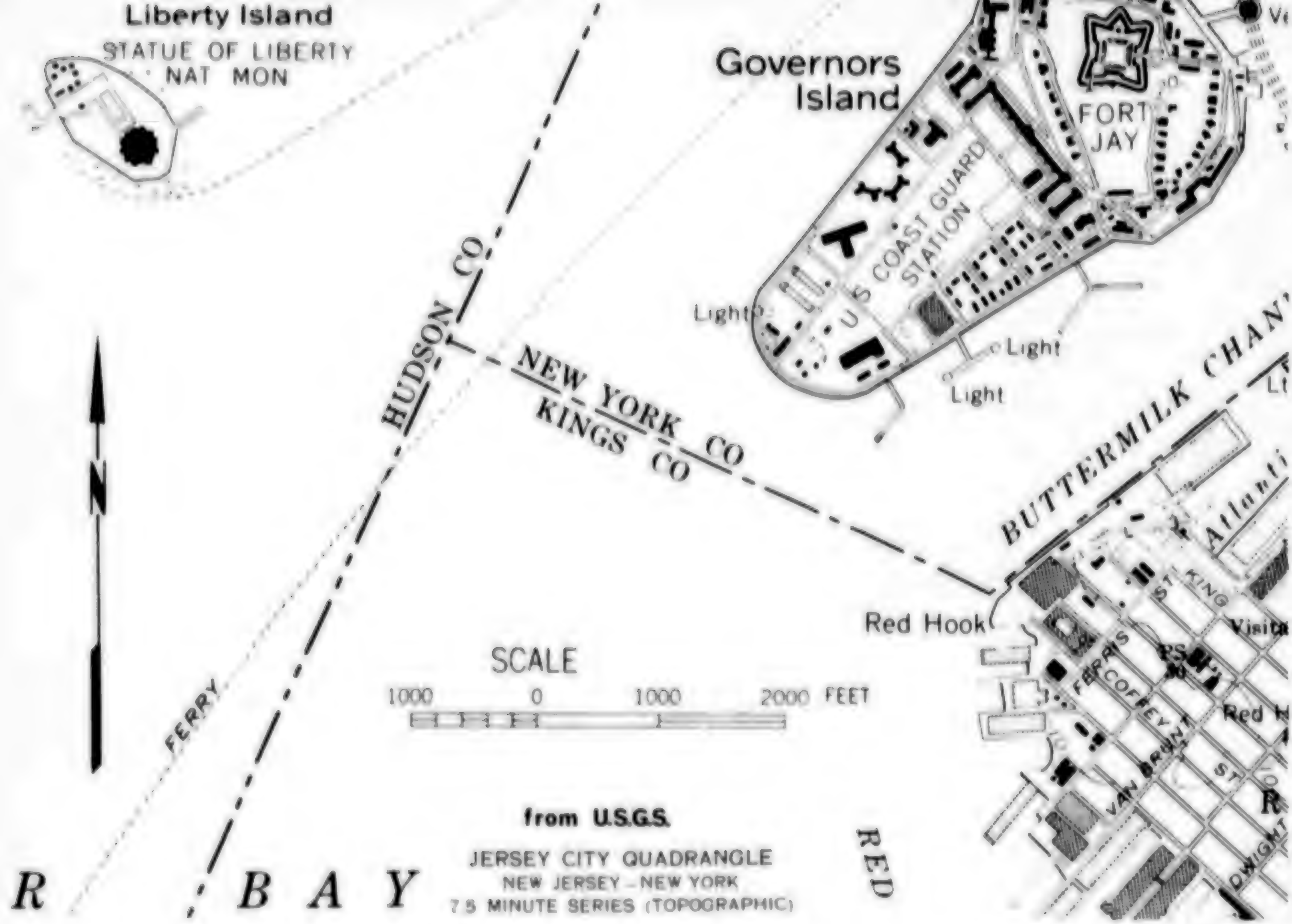

FIGURE 1. LOCATION MAP - ELLIS ISLAND

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Hudson River (or Martinsburg) Shale, of earlier Ordovician age, underlies Paulus Hook north of Ellis Island, beneath varying amounts of glacial till, and this formation (rather than the Newark Group rocks) may extend below the island (Wolfe 1977:77-93, Van Houton 1969:342).

Ellis Island and its environs are adjacent to the Piedmont Lowlands of northern New Jersey, a section of the Piedmont physiographic province of the eastern U.S. The island and nearby shoreline areas, however, could sensibly be viewed as part of an estuarial fringe of the Coastal Plain province (Fenneman 1938:13, 145-147). The climate is generally continental, but with an oceanic influence which moderates seasonal temperature extremes. Average temperatures for January range from 25.9° to 38.5°, and for July, from 68.0° to 85.2°. "Precipitation is moderate and distributed fairly evenly throughout the year" (Ruffner and Bair 1977:558-560).

Flora and Fauna

The existing flora and fauna of Ellis Island and its vicinity bear little resemblance to those which existed prior to industrial development of the region. The island's flora is a partially naturalized reflection of its former horticultural landscape (Beyer Blinder Belle/Anderson Notter Finegold 1984:94-98). The fauna of the vicinity has been nearly completely devastated, although many birds (including pheasant) find refuge on the now partially abandoned island, and recreational fishermen again ply the surrounding waters.

When European colonists first arrived in the area during the seventeenth century, Ellis Island, due to its small size and exposed position within the lower Hudson River estuary, is likely to have possessed a floral community similar to that of a coastal barrier island -- grasses and shrubs adapted to the limited availability of fresh water and the adverse effects of salt spray. Brackish marsh vegetation -- dominated by Saltmarsh Cordgrass, Salt Grass, and Saltmeadow Hay -- may have prevailed within the intertidal zone of the island, and was common along the New Jersey shoreline in the vicinity. Piedmont areas farther inland, and Manhattan Island, were at this time heavily wooded with the oak-chestnut forest common to the region (Silberhorn 1982:19-23, 97-99; Shelford 1963:18-19).

A diverse and abundant fauna prevailed in the Ellis Island vicinity at the time of European colonization. Shoreline marshes and shrubs, and associated invertebrate populations, would have supplied food for migratory and permanently resident birds as well as for amphibians and small mammals. Deer and turkey were apparently plentiful in the nearby forests, along with lesser numbers of wapiti (elk), wolves, and bears. Many of these plants and animals also contributed to the subsistence of prehistoric (and historic) human populations (Warner 1972), but the fish and shellfish of the Hudson River estuary were of equal if not greater importance locally in this regard.

Among the larger fish of the estuary were striped bass, bluefish, weakfish, flounder, and sturgeon. Also present were shad and herring, schools of which migrate upriver in the spring to spawn. The bank surrounding Ellis Island, as noted above, constituted an oyster bed populated by the American oyster (*Crassostrea virginica*). Hard clams and blue mussels, together with other mollusks, are also likely to have been present in the vicinity (Lippson and Lippson 1984).

During and prior to the submergence of the bank surrounding Ellis Island, the flora and fauna of the vicinity underwent significant changes. During the early post-glacial period (following the demise of Lake Hudson) a "boreal-like" forest dominated by pine, spruce, birch, and fir covered the region, and the associated fauna included species such as mastodons, mammoths, and caribou (Newman 1977:562; Fisher 1955). About 10,500 years ago a pine forest became dominant, while about 7,500 years ago oak forests began to dominate, and the fauna probably approached its late prehistoric state. A succession of shoreline and marsh floral and faunal communities would have accompanied the gradual submergence of the bank surrounding the island, culminating in the historic oyster bed. The age of this oyster bed is unknown, but it could not have existed before the bank was in large part sub-tidal, beginning roughly 2,500 years ago.

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CULTURAL BACKGROUND

Prehistory

Native peoples undoubtedly used Ellis Island prior to European colonization of this part of the New World. The island's prehistory, however, remains largely speculative since diagnostic evidence of specific prehistoric activities was not found there prior to 1985. The paramount motive for use of the island throughout prehistory was probably the exploitation of food resources.

Kardas and Larrabee have suggested that during the Paleo-indian period (c. 10,000 to c. 7,000 B.C.) "Ellis Island ... would have been a desirable hill from which to observe migratory herd animals, starting as soon as the last Wisconsin glacial melt had passed" (1976:12). It is likely that Ellis Island only became an island some 3,000 to 4,000 years ago, due to a rising sea-level (see environmental background, above). If the hill that became Ellis Island was used as an observation point, those doing the observing may have camped there and prepared for hunting, leaving a scatter of lithic material, ethnofaunal remains, and possibly hearths when they departed.

During most of the Archaic period (c. 7,000-500 B.C.), "Ellis Hill" would have stood near the edge of the Hudson River, with forest or meadow between it and the more elevated portions of the river's existing west shore. It would have been "an excellent place for people using both estuarial and local game resources" (Kardas and Larrabee, 1976:12). The increasing diversity of resources and of techniques for exploiting them may have allowed for more frequent and longer periods of use by larger groups, and the artifacts and ethnobotanical remains left on the island from this period may reflect a more complex array of activities.

Gradually, the rising sea-level would have created salt marshes around the island, so that by the beginning of the Woodland period (c. 500 B.C.), a different set of ecological circumstances faced the population exploiting this area. At some point, it became impossible to walk to the island. Even sooner, and more importantly, sources of fresh water would likely have become more distant. These factors would have deterred any settled occupation of the island, especially when coupled, late in the period, with the increasing importance of horticulture for the subsistence of local populations. Seasonal exploitation of increasingly large oyster beds, of anadromous species of fish, and of available bird populations, is nonetheless likely to have been intensive. A definite pattern of artifact variation and distribution would have resulted from the occurrence of these episodes of intensive activity over a period of several hundred years.

Kardas and Larrabee, in reviewing what is known about the area archeologically, determined "that a number of sites have been found fairly close to Ellis Island, despite urban growth," and suggested that other sites, even closer, have probably been destroyed (1976:16). There can be no doubt regarding the likelihood of prehistoric material on Ellis Island, although much of this material was presumably disrupted during historical development of the island. The probable impacts on these contexts will be discussed below.

Early History: Oyster Island to Ellis's Island

> This little island, laying along the oyster banks of the Jersey shore, has from the earliest times since the settlement of the Dutch, been known by the name it still bears. It was always a desert island until it came into the possession of the United States, and was a common resort of parties from the city for oyster feasts, for which it was famous in times of the Dutch .... At one period, about a

> century since, this island was nicknamed "Bucking" Island .... It has been known, at different periods, by the names Ellis island and Gibbet Island. The latter appellation being given, it is supposed, from the circumstances of its being, at times, the place of execution of State criminals.
>
> [from Valentine's Manual of the City of New York, 1855]

Seventeenth and early eighteenth century charts and maps of the New York Harbor area show Ellis Island (Kardas and Larrabee 1976:66-70), but the earliest map to depict structures on the island (identified as Bucking Island) was published in 1776, based on a survey made in 1766-1767 by Lieut. B. Ratzer (figure 2). Contrary to the description above, it was not a "desert island" for at least forty years prior to the establishment of U.S. title in 1808. There can be little doubt, however, that local colonists carried on with uses of the island familiar to the Indians. Oyster "feasts" and fishing for shad may no longer have been dictated by necessity, and not yet by commercial incentives, during the first century of the island's history, but by the middle of the eighteenth century it would probably have been possible to assess its worth, as was done several decades later:

> The quality and appearance of the land is no criterion to judge its value to the owners. It is found to be one of the most lucrative situations for shad fishing by set netts within some distance of this place, yielding annually from 450 to 500 Dollars to the occupant from this single circumstance. The Oyster Banks being in its vicinity affords an income in the loan of oyster boats, rakes, etc. of which before I had no idea; besides this a considerable advantage results to the occupant from a tavern in the only possible place of communication for people engaged there between the oyster banks and this city.
>
> [Letter dated 16 May 1808; Public Papers of D.D. Tompkins, V. II, p. 85f.; quoted in Berengarten, 1934:17.]

Seventeenth century ownership of the island has been documented, but it was Samuel Ellis whose name the island took. Ellis was a New York merchant who came into possession of the island sometime before 1778 (Berengarten 1934:9). In 1785 Ellis attempted to sell it "together with all its improvements, which are considerable..." (Tifft 1971), but the island remained his possession until his death in 1794 (Pitkin 1975:3; Berengarten 1934:9). Since Ellis on at least two occasions advertised the sale of barrels of shad and herring (Berengarten 1934:7, 9), it seems possible that his island served as a base for the commercial exploitation of these resources. It is also likely that, through an agent, he operated a tavern on the island. The location of his "improvements" is probably that of the buildings depicted on the 1776 Ratzer map (figure 2), toward the northwest end of "Bucking Island." The construction material of these early buildings is unclear, and their depiction may be schematic. Differently configured buildings in the same area during the first decade of the nineteenth century were evidently brick. A variety of historic period artifacts, of European and local origin, were presumably deposited on the island during this phase of its history, for the most part in the vicinity of the buildings.

Ellis Island was also used, beginning in 1765, as the place of execution of a number of State criminals, primarily men convicted of piracy (Berengarten 1935:6-7). "In the 1830s the island came into use again as a place of execution, and several pirates were hanged there" (Pitkin 1975:3, 6). Although Kardas and Larrabee speculate that the remains of some of the men executed on the island were buried there (1976:17), a contemporaneous account of an 1831 double execution

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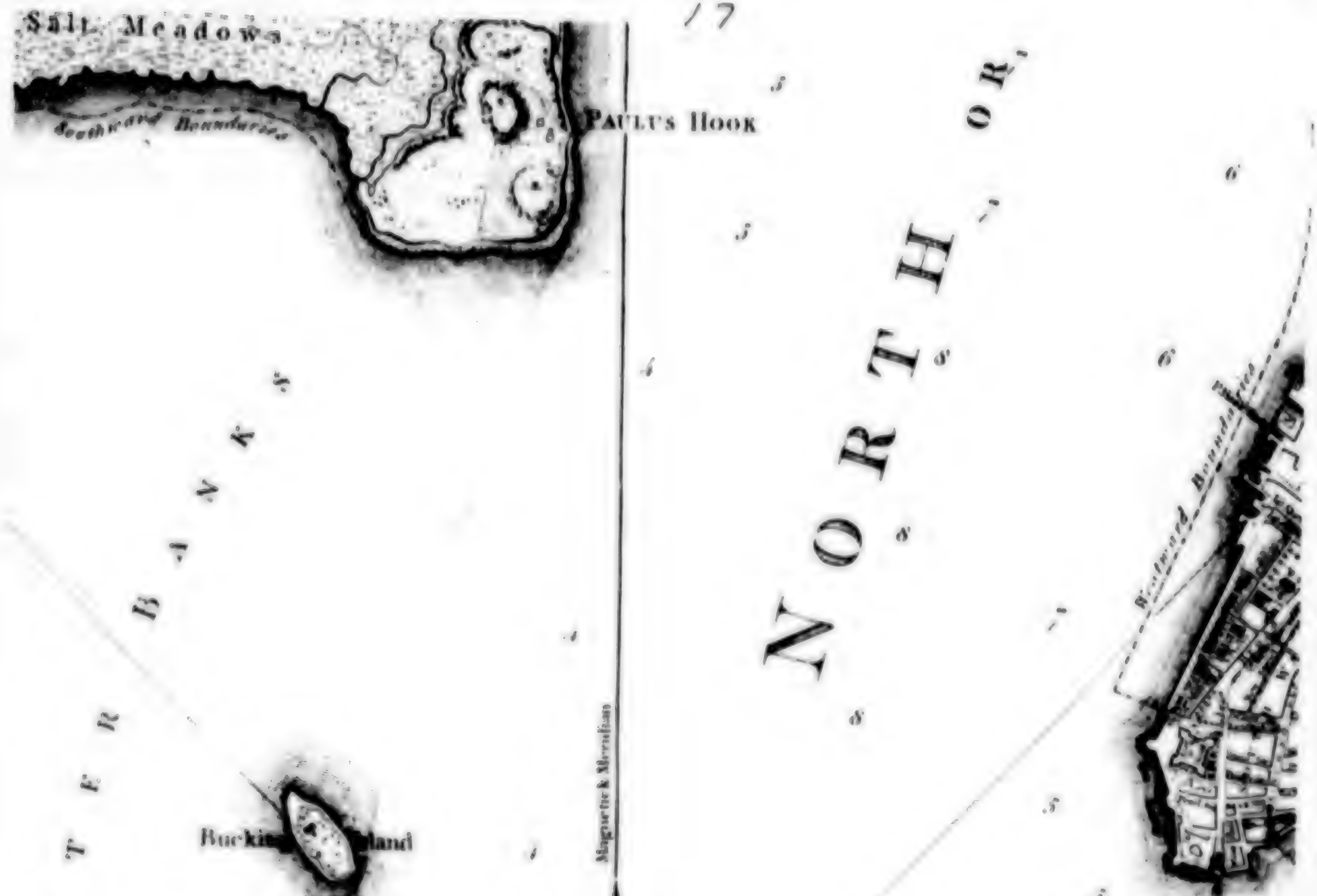

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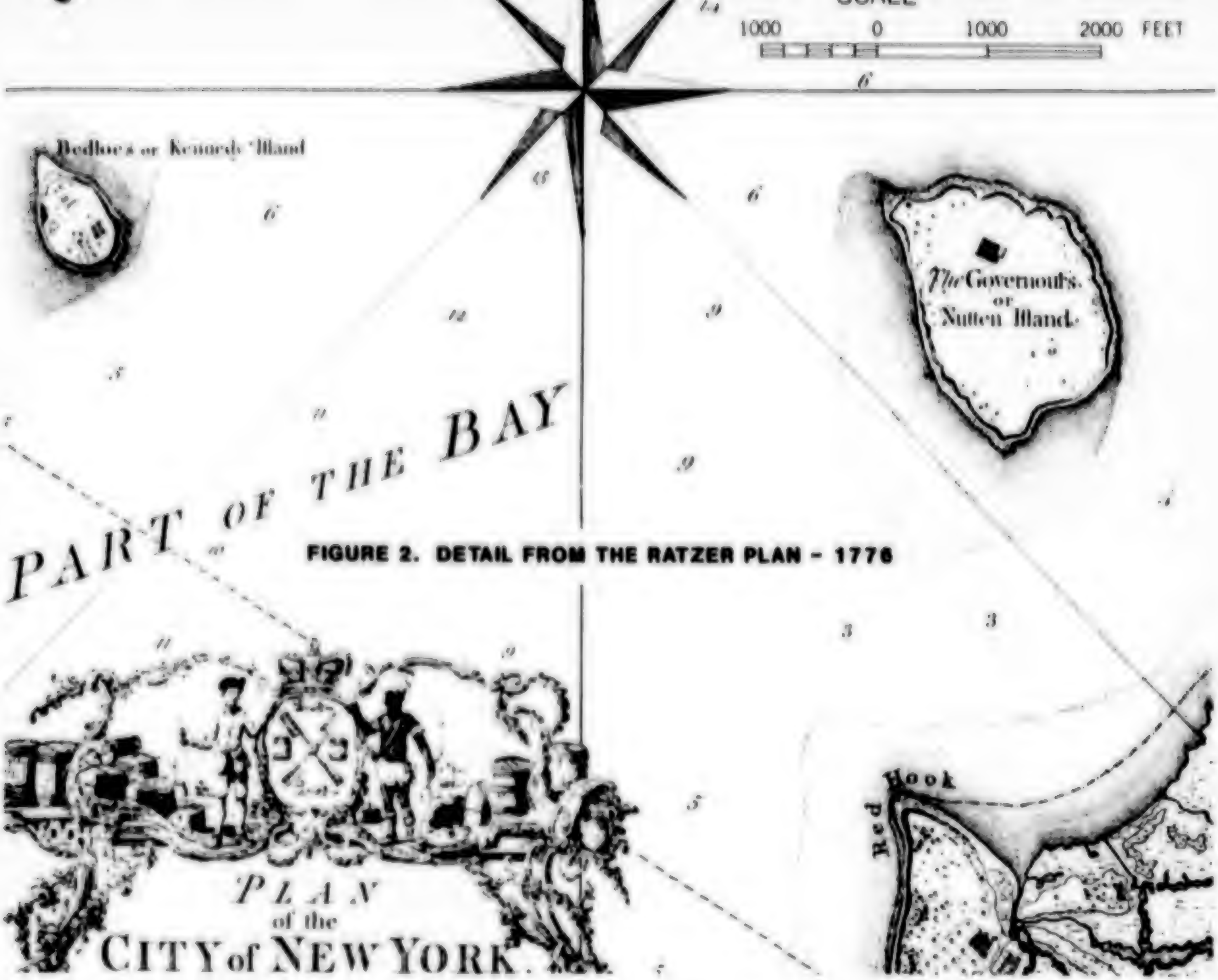
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Red Hook
PLAN of the CITY of NEW YORK

FIGURE 2. DETAIL FROM THE RATZER PLAN - 1776

indicates that the bodies were "sent to the College of Surgeons and Physicians for dissection" (Berengarten 1934:23). Such disposition of the remains of executed individuals may have been routine.

Early History: Harbor Defenses and Naval Magazines, 1794-1890

The year Samuel Ellis died, 1794, "the city deeded Bedloe's Island and the 'soil from high to low water mark around ... Ellis's Isle' to the state for necessary fortifications" (Tifft 1971). War with Great Britain was threatening, and Secretary of War Henry Knox had sent Charles Vincent, a French engineer, to make plans for the defense of New York (Pitkin 1975:3-4). In submitting an estimate for necessary expenditures on fortifications in New York Harbor, Vincent included the following:

> Oyster Island — One strong enclosed battery mounting eight pieces of heavy artillery, $2,000 — This important work already begun, is to be finished as soon as possible.
>
> [Berengarten 1934:12]

A plan located in the French Marine Archives (figure 3) shows a fortified Ellis Island (identified as Oyster Island). These fortifications may be, as Berengarten suggests (1934:12), the ones Vincent designed, but the plan more likely dates to the 1798-1808 period. The battery, in any case, would have been situated from the beginning at the southeast end of the island, as shown on the plan, to command the approaches to New York. The inlet-like area along the northeast side of the island may have resulted from excavation of soil for use in earthworks to enclose the battery or in creating the jetty at the southwest side of the island. The structures at the northwest end of the island are presumably the earlier commercial facilities, the operation of which, along with private ownership of the island, continued until 1808.

In 1798 there was again a threat of war, this time with France, and again work was performed to improve the defenses of New York Harbor (Pitkin 1975:4). "Colonel Stevens advised the Secretary of War on November 23, 1798, that the barracks on Ellis Island had been completed, that twelve 24 pounders had been mounted there, and that the island could accommodate one company of soldiers" (Berengarten 1934:14).

The fort was found to be "unfinished and with its guns unmounted" by Major Decius Wadsworth in 1802 (Pitkin 1975:4), while in 1805, Lieutenant Colonel Jonathan Williams described it as "dismantled and totally out of repair" (Pitkin 1975:5). Williams, however, prepared a plan for harbor fortifications which "called for a 'casemated Battery' to be erected on Ellis Island," and urged the purchase of that part of the island (everything above high water) which remained in private hands (Pitkin 1975:5). This plan was approved in 1807, and the island purchased and deeded to the U.S. in 1808.

"The old wooden parapet is taken down at Ellis's Island, and the platform for a gun battery is completed, there only remains to wall up the parapet, when it will be ready to receive its cannon." So wrote U.S. Senator Samuel L. Michell to Judge Ambrose Spencer in October, 1808 (Berengarten 1934:18). In January, 1809, Secretary of War Henry Dearborn "remarked that the barracks inside the fort on Ellis Island had been made habitable by some alterations" (Berengarten 1934:18-19). Nonetheless, the fort still lacked a magazine and adequate barracks at

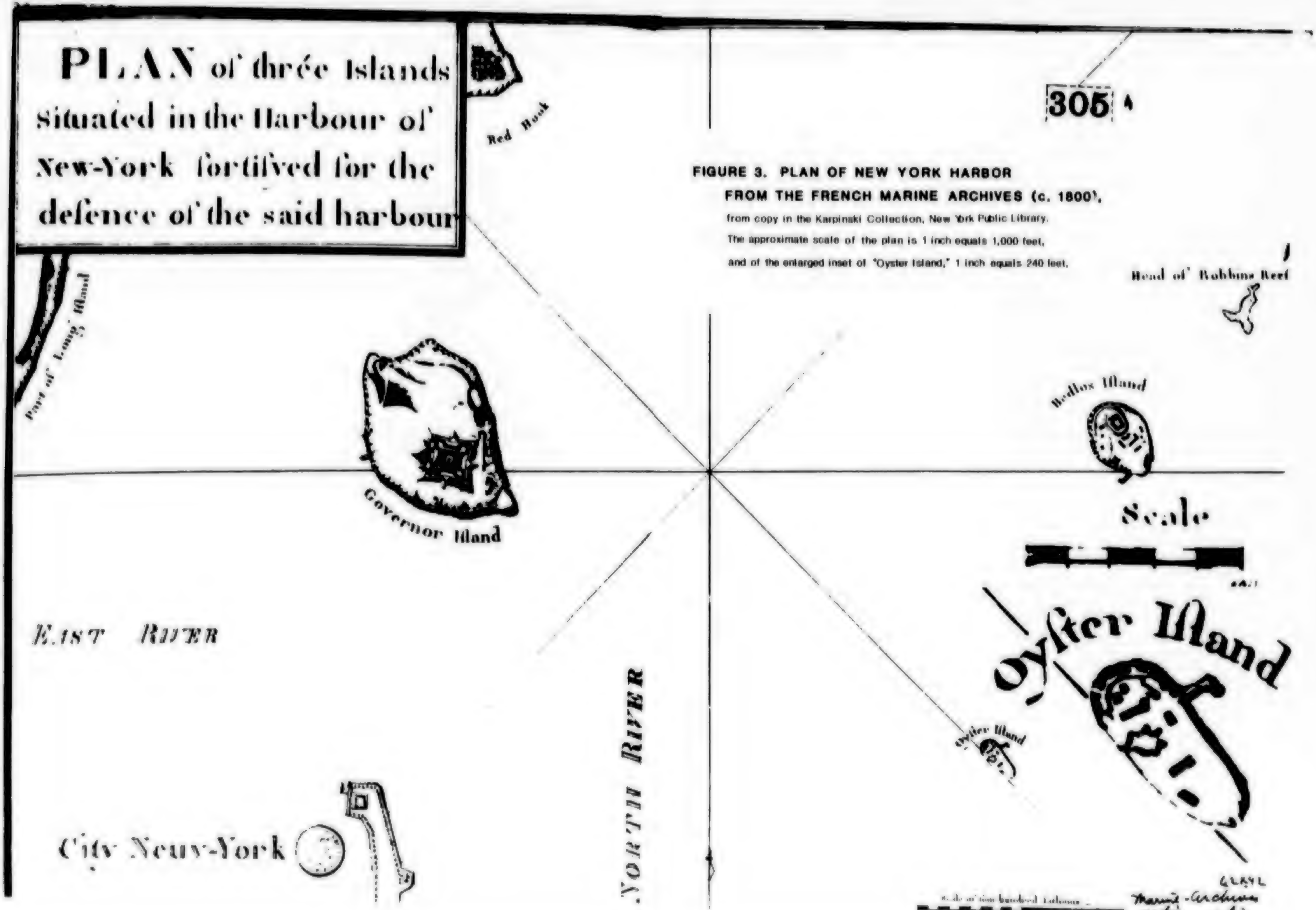

FIGURE 3. PLAN OF NEW YORK HARBOR FROM THE FRENCH MARINE ARCHIVES (c. 1800), from copy in the Karpinski Collection, New York Public Library. The approximate scale of the plan is 1 inch equals 1,000 feet, and of the enlarged inset of "Oyster Island," 1 inch equals 240 feet.

the end of 1811. "In the following spring, only a few months before the outbreak of the War of 1812, this construction was directed and presumably completed" (Pitkin 1975:6).

Williams considered the fortifications on Ellis Island temporary, and evidently hoped to construct a circular work there like Castle William on Governor's Island (Berengarten 1934:19; Pitkin 1975:6). The fortifications of this period, however, were never that drastically modified prior to their final abandonment in 1890.

A plan, a profile, and a "front view" of the island's fortifications (figure 4), drawn in 1813, show Fort Gibson (so named in 1814) as it would exist for more than twenty years. The battery is shown to have a masonry parapet more than 15 feet thick rising 16.5 feet above high water and 6.25 feet above the 12-foot wide gun platform. The front view depicts 13 embrasures. Shown to the northeast of the battery are (from right to left on the profile): a flagstaff, a hotshot furnace (?), a building later identified as the fort's "store," a wing of a single story barracks, and a two-story officers' quarters. A pump, presumably over a well or cistern, is located southwest of the store. The magazine, not shown in profile, is situated immediately inside the wall at the fort's west corner. Another wall connects the northeast end of the battery to the wing of the barracks. The main part of the barracks, completed in 1798, appeared on the earlier French Marine Archives plan (figure 3). A separate group of buildings, one of which also appeared on the earlier plan, is shown toward the northwest end of the island. One or more of these buildings, which are clustered around another pump and well, may derive from the commercial facilities on the island prior to 1808. The inlet-like area shown on the earlier plan has been filled, and a low wall constructed around the entire island. The front view shows a sentry box at the base of the pier.

An undated plan of Ellis Island (figure 5), in color but otherwise nearly identical to the 1813 plan, shows all the buildings and walls in red, suggesting that they are of brick construction, and the parapet in gray, presumably representing stone. An 1819 plan of the island and profile of the battery (figure 6) also in color, again shows the buildings which remain from 1813 and the walls of the fort in red, but the low wall around the island is shown in gray, and the parapet, although mostly gray (stone?), has a red (brick?) facing and backing. The 1819 plan also shows, with dense gray hatching, a newer building west of the fort, identified as a cookhouse on an 1820 plan (figure 7), and it appears to indicate marshy areas at the northeast side and the northwest end of the island. Both of these later plans document that the probable hotshot furnace and all the buildings at the northwest end of the island had been demolished by 1819.

Berengarten, citing Oliver Morehouse's Reminiscences, states that the stone used in constructing Fort Gibson came from quarries at Nyack, New York, and Newark and Belleville, New Jersey (1934:19).

During the War of 1812, the strength of the defenses of New York Harbor evidently deterred a British attack. Fort Gibson saw no action, although as many as one hundred and eighty-two artillerists were stationed there (Berengarten 1934:19). The island also housed British prisoners of war (Pitkin 1975:6), probably in the structures at the northwest end of the island. Following the war, the fort was used as a recruiting depot, but was soon nearly abandoned. By 1835, the Navy had

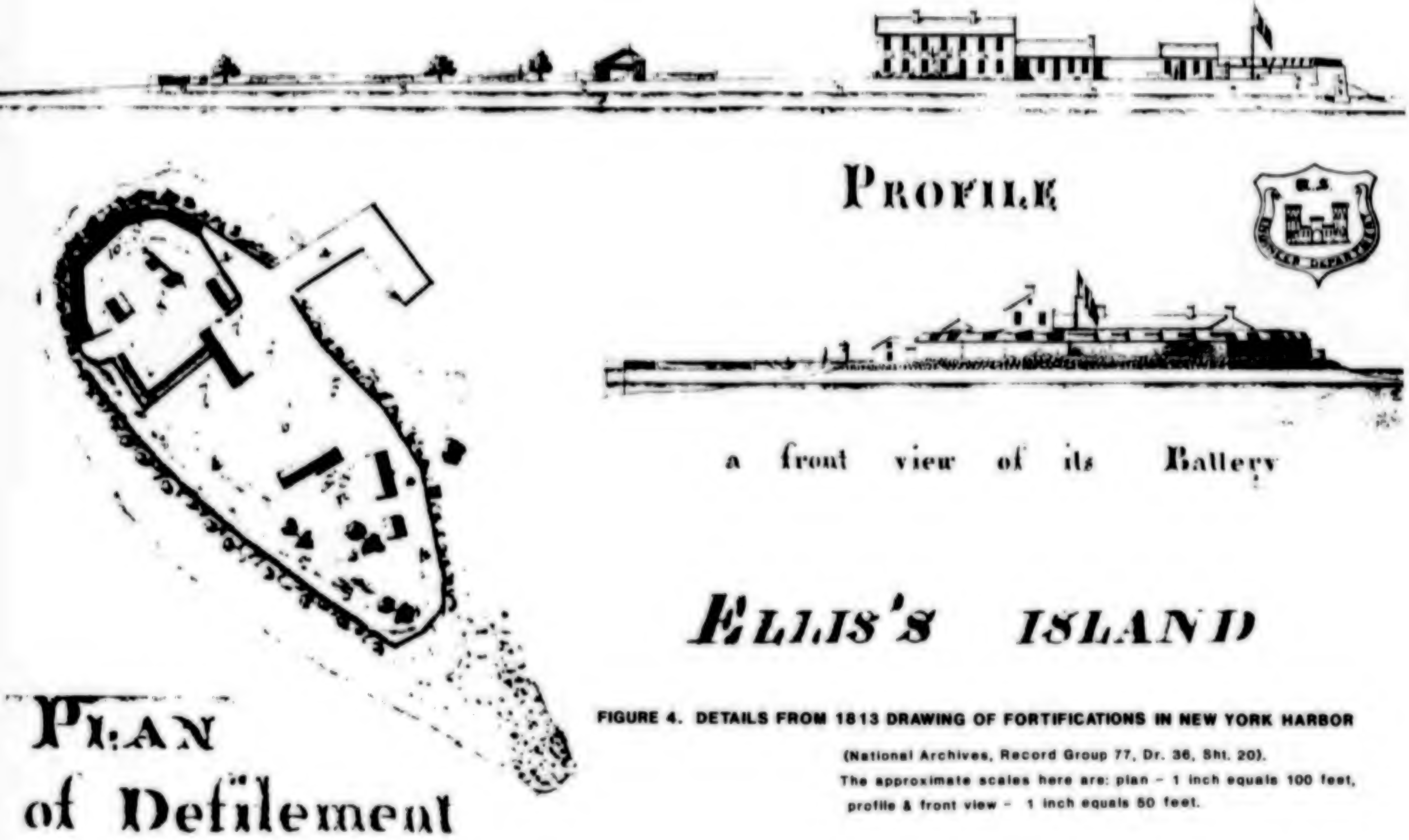

FIGURE 4. DETAILS FROM 1813 DRAWING OF FORTIFICATIONS IN NEW YORK HARBOR

(National Archives, Record Group 77, Dr. 36, Sht. 20).

The approximate scales here are: plan – 1 inch equals 100 feet, profile & front view – 1 inch equals 50 feet.

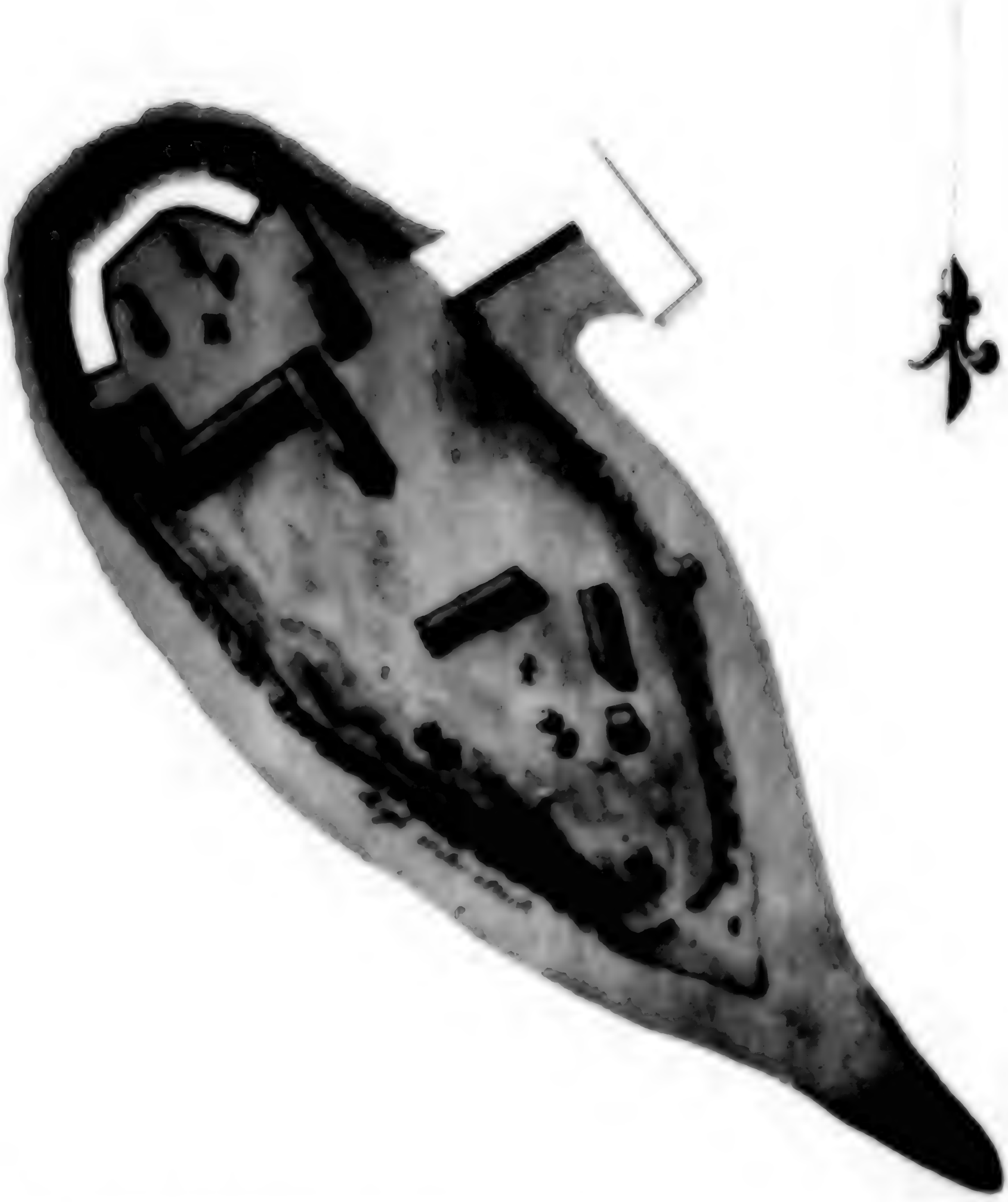

FIGURE 5. PLAN OF ELLIS ISLAND,c.1813

(National Archives,Record Group 77,Dwr.38,Sht.2)

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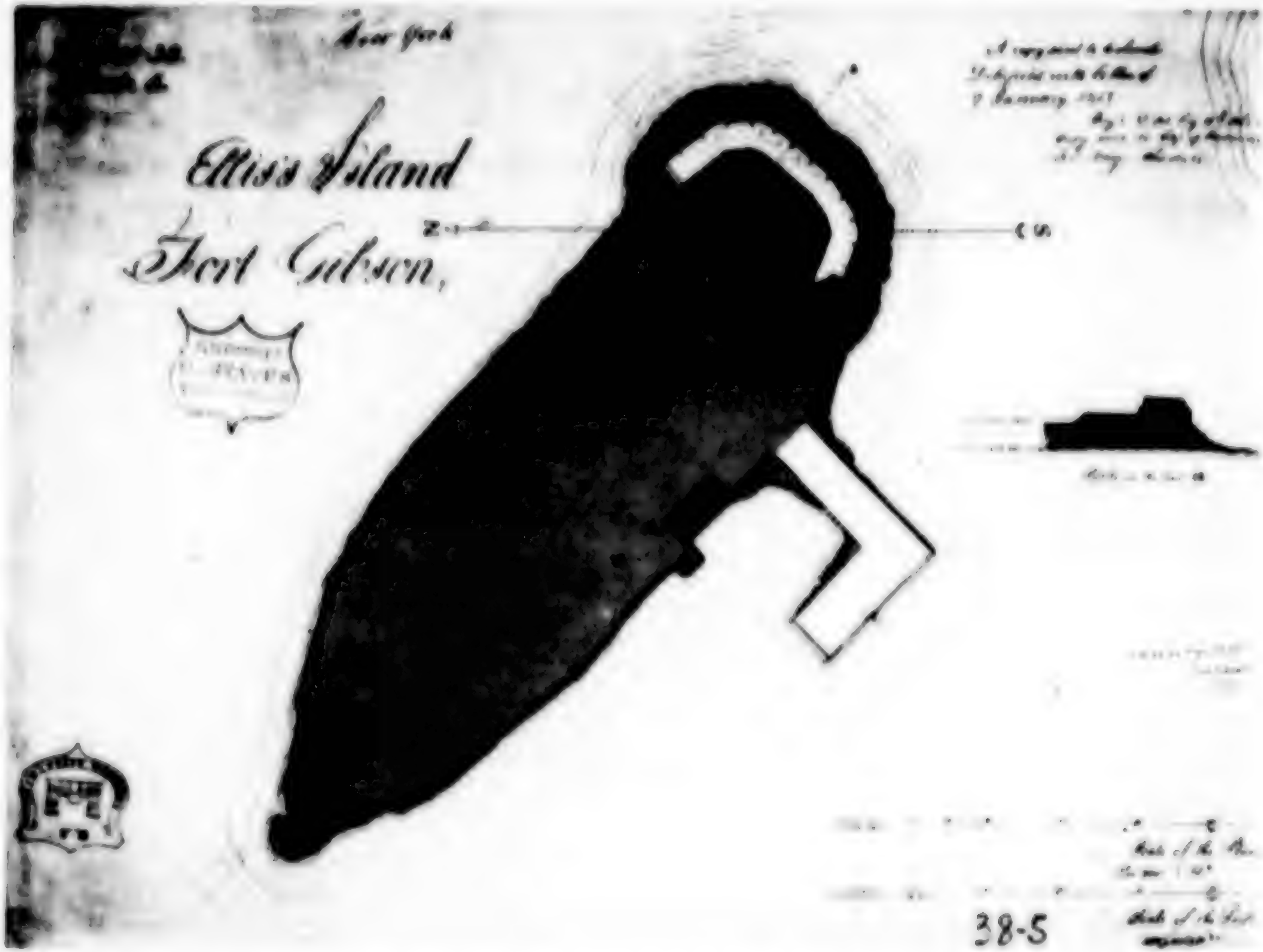

FIGURE 6. PLAN OF ELLIS ISLAND "Drawn by CAPT. POUSSIN,1819"

(National Archives,Record Group 77,Dwr.38,Sht.5 Not To Scale)

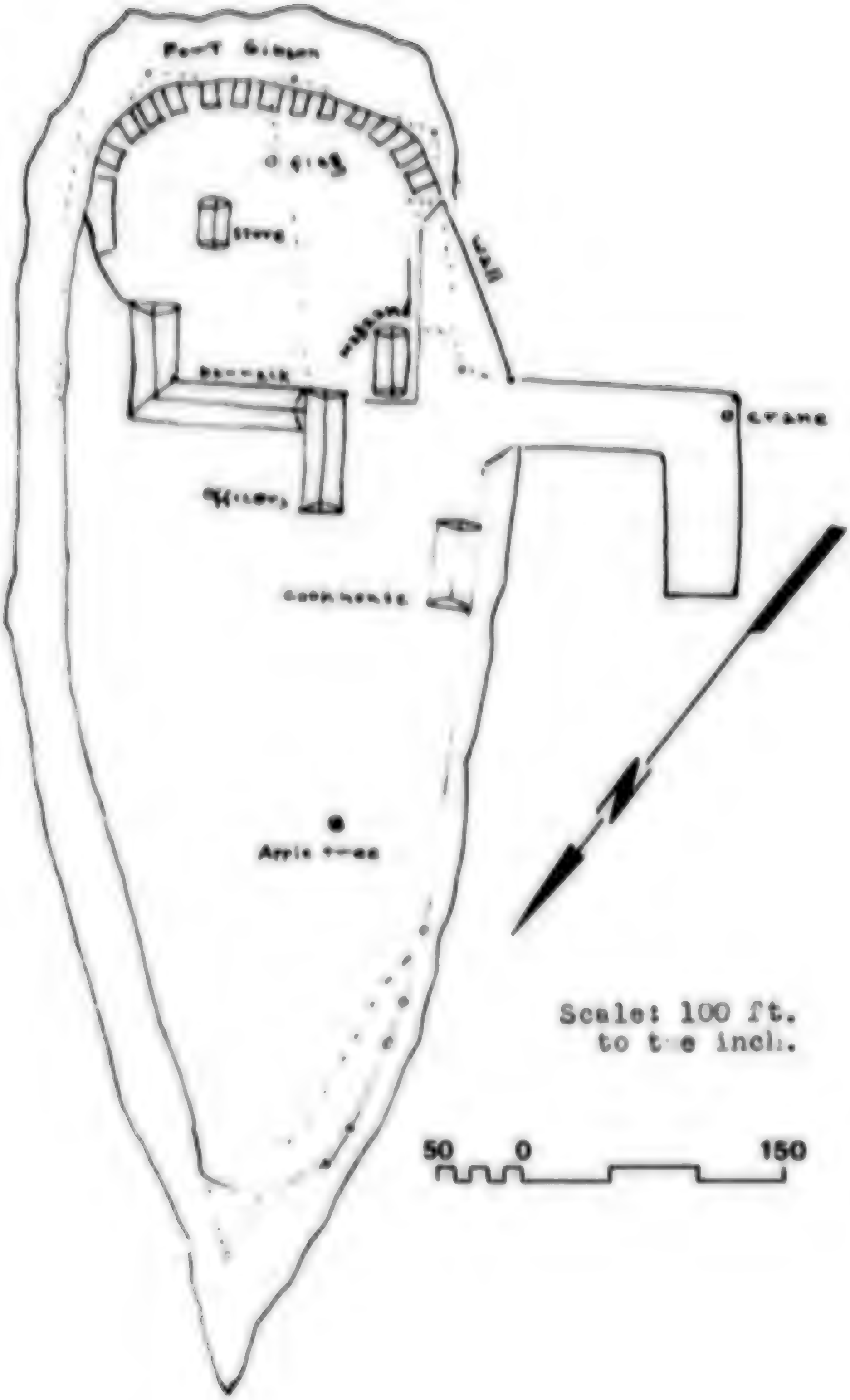

FIGURE 7. COPY OF c. 1820 PLAN OF ELLIS ISLAND

based on a survey by John Randall Jr. credited
by Berengarten (1934:22) as 'from Kelby mss. notes'
(New York Historical Society Library)

control of the island, for use as a powder magazine, and a period of alternating and joint army-navy administration had begun (Pitkin 1975:7; Tifft 1971).

Although the navy retained control over its magazine, the army, in 1841, resumed administration of the island. During 1842 the army made extensive repairs to the fort, and constructed a new hotshot furnace. In 1843 the fort was reported to be "armed and equipped" (Pitkin 1975:7). The army did not, however, garrison the fort (which had officially been downgraded to "Battery Gibson"), but left it in charge of a small guard which the navy posted to protect its magazine.

An 1854 plan of Ellis Island (figure 8) shows two naval magazines within the fort: a large structure directly southwest of the location of the 1813-1820 store, and a smaller, proposed magazine, soon to be built, somewhat farther southwest. A railway is shown extending from the pierhead to the magazines. Among the other "new" buildings which this plan shows, which for the most part presumably date to the 1830s and 1840s, are the hotshot furnace at the east end of the barracks, a kitchen and an oven attached to the dwelling house (formerly identified as officers' quarters), a gun carriage house, a barn, and "gunners houses." In addition, what are probably fences, privys, cisterns, and a well are indicated. The battery is shown to have only eleven guns (two less than in 1813-1820), and the c. 1820 cookhouse is not shown.

Although Fort Gibson was reputedly dismantled in 1861 (Berengarten 1934:26), the army in fact installed heavy new guns at the fort during the Civil War — 10 rifled 32-pounders and 2 smoothbore 8-inch seacoast howitzers (figures 9 and 10). The fort's parapet, however, evidently was partially dismantled, and the new guns mounted *en barbette*. At the

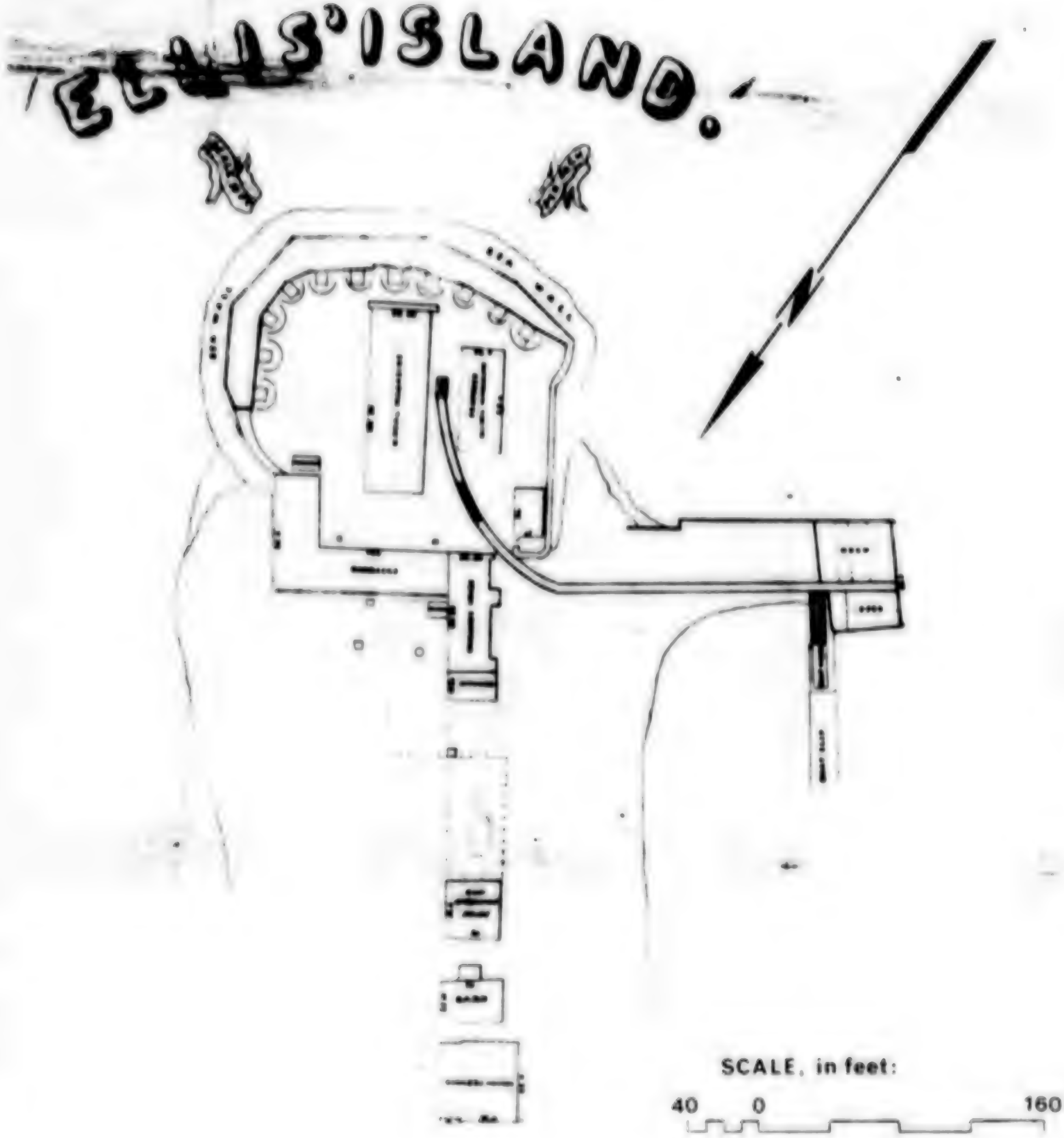

FIGURE 8.

1854 PLAN OF ELLIS ISLAND
(from National Archives,
Record Group 77, Dr. 38, Sht. 51)

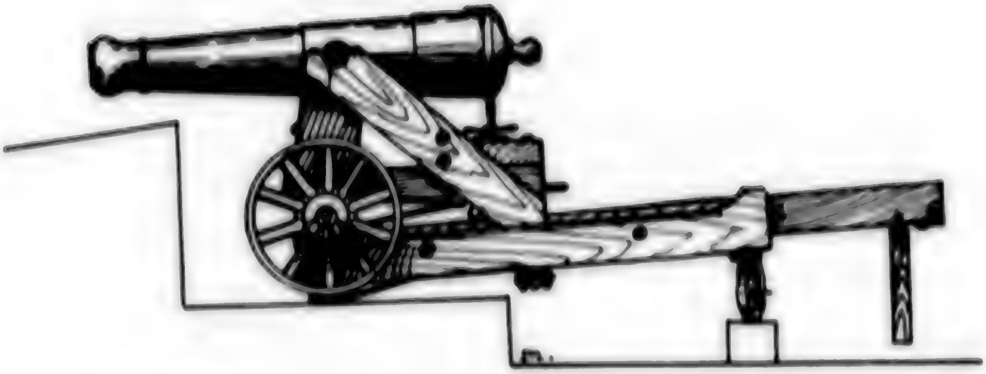

FIGURE 9. U. S. 32-Pounder on barbette carriage (1860) (from Mauncy 1942:12)

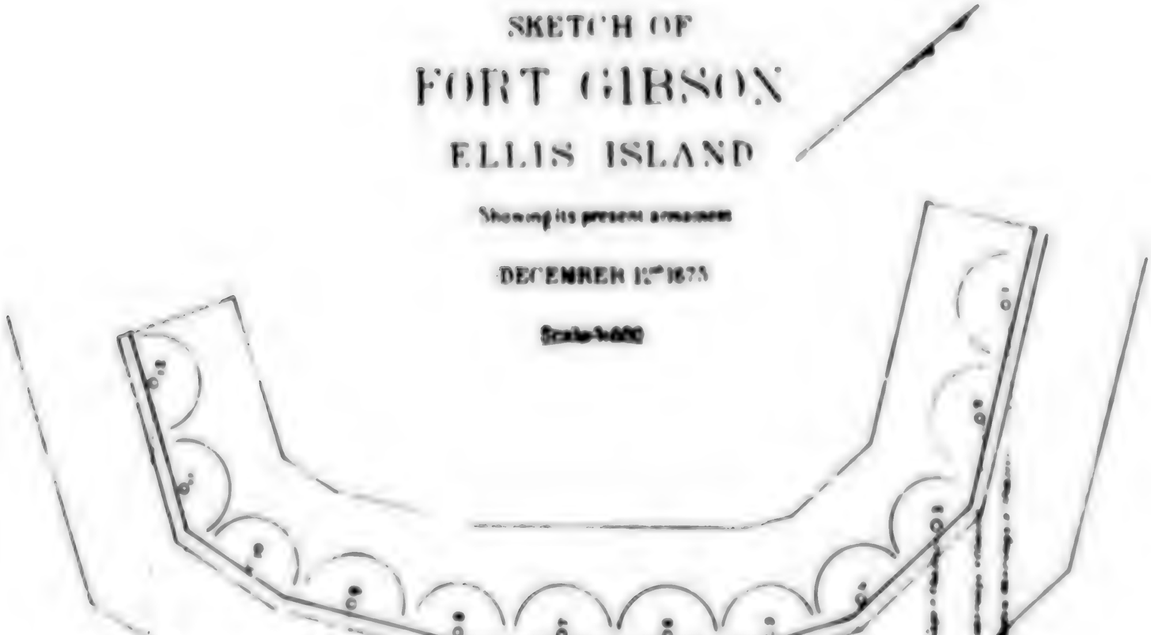

FIGURE 10. An 1873 sketch showing the armament of Fort Gibson (from National Archives, Record Group 77, Dr. 250, Sht. 6 / not to scale)

same time, the navy was establishing more extensive magazines on the island, including one "so close to the hotshot furnace that it could not be used" (Pitkin 1975:7). The navy evidently remained in effective control of the island during and after the Civil War. Although the battery was not dismantled until 1891, it fell into disrepair within a few years after the war (figure 10; "Note ... in present condition guns cannot be fired - carriages being rotten").

An article which appeared, together with an illustration, in the March 14, 1868, edition of Harper's Weekly called attention to the "imminent peril" to New York, Brooklyn, Jersey City, and Staten Island, posed by the powder and shells stored by the navy on Ellis Island. The illustration (figure 11) is a view of the magazines from the southwest. It shows, from right to left: the wall at west corner of Fort Gibson, in which there is a strong gate and beyond which are the roofs of three magazines; the former officers' quarters, converted together with the barracks into a shellhouse (Shellhouse No. II); and a Civil War-period building, also a shellhouse (Shellhouse No. I). Manhattan is in the background and railways are in the foreground of the illustration. The article noted that the six magazine buildings (probably including the "gunners houses" of the 1854 plan) "are built of solid masonry with slate roofs" and that:

> A great deal of precaution is taken to prevent any accidents on the island; ... the magazines are plentifully supplied with lightning-rods; great care is taken in handling the powder; the workmen wear canvas shoes, and are not allowed to carry pocket-knives or other steel or iron implements; and the metal work used in the magazines is all of brass or copper. But still the greatest of precautions are sometimes in vain.

There is no evidence that the navy heeded any of this alarm (Pitkin 1975:8). Nonetheless, the concerns first expressed in the article

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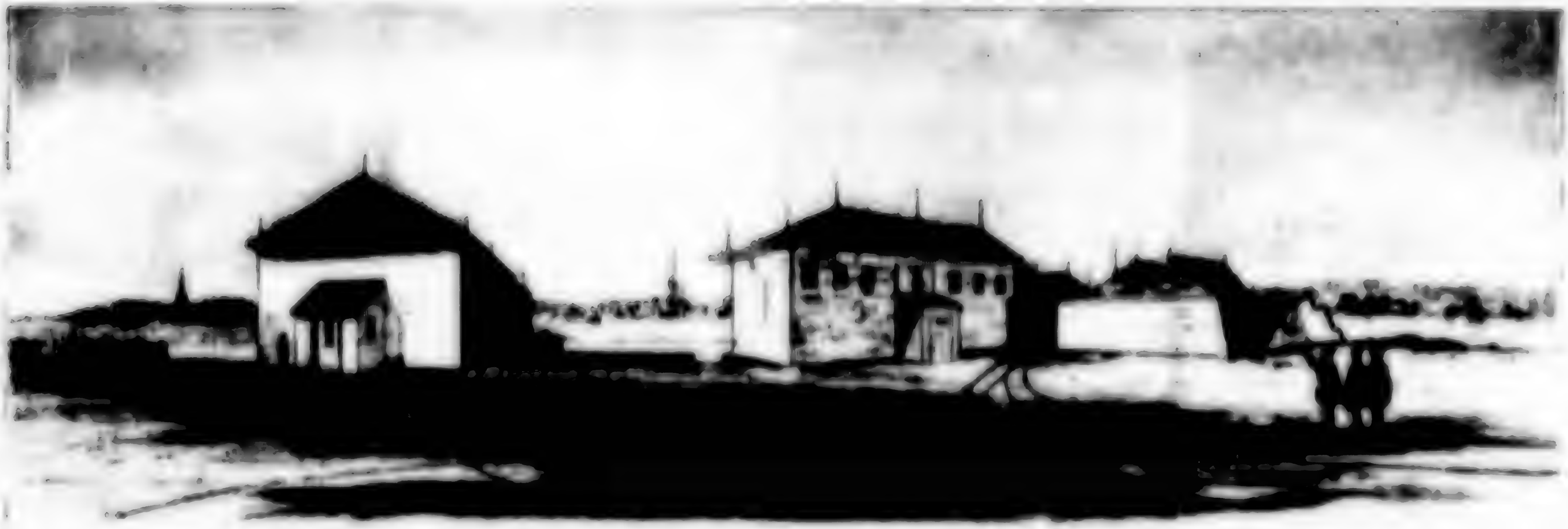

Figure 11. 1868 Illustration of the Naval Magazine (Harper's Weekly, March 14, 1868)

The view is from the southwest, and the structures depicted are, from right to left, the parapet and wall of Fort Gibson (beyond which are the roofs of three buildings), Shell House No. 2 (originally officers' quarters and barracks), and Shell House No. 1. Manhattan is in the background, and prominence is given to the spire of Trinity Church between the two shell houses.

resurfaced shortly before Ellis Island was selected as the site of a new immigration station in 1890, and they may have contributed to its selection.

It appears that little more by way of physical development of the island occurred between the Civil War and 1890. Plans prepared in 1879 (figure 12) and 1886 (BCT 1980:2) are nearly identical. A copy of a plan made in 1890 (figure 13) shows only minor changes, but sketched on this copy are the locations of the successive main buildings of the two immigration stations which, beginning in 1891, would transform Ellis Island. The 1890 plan is important also because it identifies nearly all the buildings on the island by use and by construction material, and because it provides cross-sections of the island as it existed before its transformation.

The long period of military use of Ellis Island, nearly a century, resulted in creation of a major part of the island's archeological resources. Remnants of some of the buildings constructed during that period are likely to remain, buried beneath the existing surface of the island. Equally important are deposits of artifacts deriving from that period. The specialized nature of the military activities on the island is presumably reflected in the composition of these deposits, but there are undoubtedly many artifacts which represent common aspects of the region's and the nation's culture during that period.

The First Immigration Station

The federal government assumed control over the processing of immigrants during 1890 and 1891, in part as a consequence of widespread controversy over U.S. immigration policy during the preceding decade (Pitkin 1975:9-11). Ellis Island, despite some drawbacks, was selected as the site for a new immigration station for the port of New York, and following removal of the naval magazine and the old guns of Fort Gibson, construction of the new facilities began.

Among the first tasks was "the dredging of a channel to a depth of 12 feet or more [below Mean Low Water], 200 feet wide and 1,250 feet long" (Pitkin 1975:13). Some of the dredged material is likely to have been used as fill to enlarge the island (Kobbe 1891:73). More than 1,700 feet of new docks and other crib work defined the outline of the larger island and of the ferry basin along its southwest side (figures 13 and 14).

Most of the buildings previously occupied by the naval magazine were modified for use by the immigration station. Earlier buildings demolished at this time were the office building, the pyrotechnic magazine, and the fire engine house, all of brick. The remainder of the parapet of Fort Gibson, the gun platform, and various outbuildings were also removed.

The major new structures were a two-story main building, 400 feet long by 150 feet wide, and a boiler and engine house, 125 feet by 55 feet. Three new hospital buildings were also constructed, in the vicinity of Shellhouse No. 1, which was itself converted into an "insane hospital." The former gunners' quarters, after serving as a construction office, became the surgeon's quarters. A kitchen and small dining room for the hospital complex were built where previously there had been a pier (or possibly an earlier structure), at the northeast end of the insane hospital. The main kitchen for the station was in what had been the large powder magazine. A new restaurant building, 130 feet long by 30 feet wide, was constructed at the

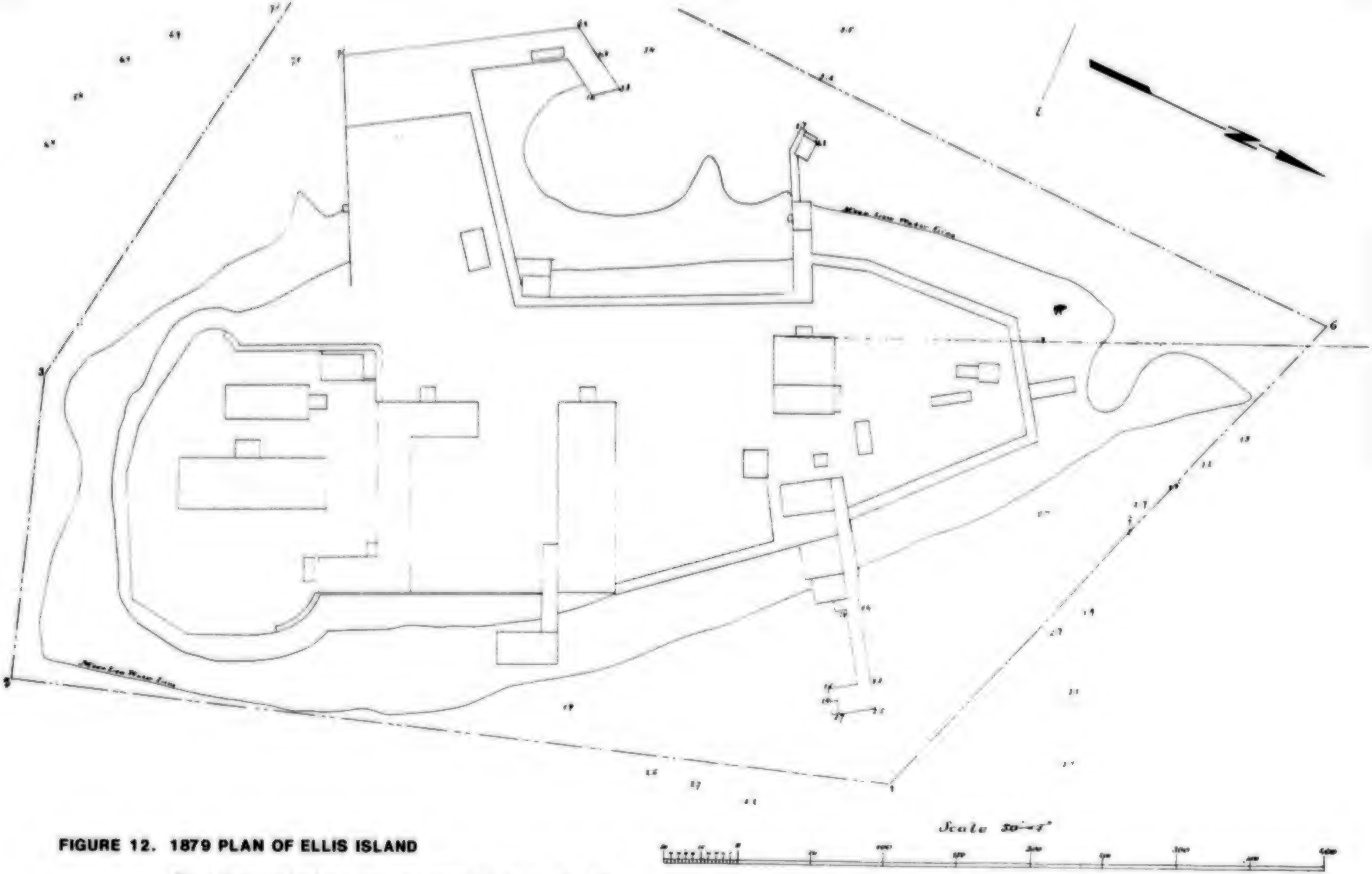

FIGURE 12. 1879 PLAN OF ELLIS ISLAND

(from National Archives, Record Group 77, Dr. 38, Sht. 48)

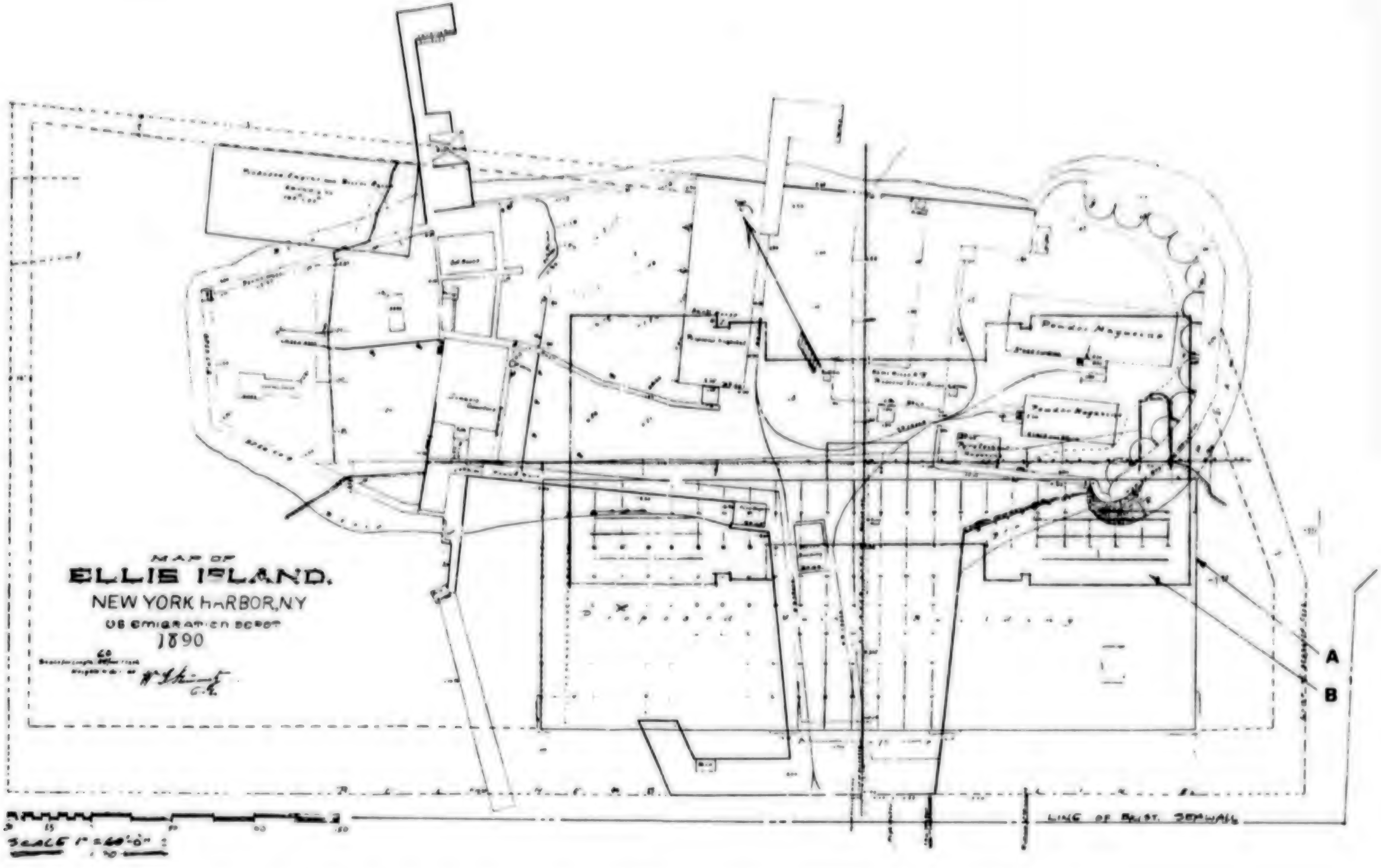

FIGURE 13. 1890 PLAN OF ELLIS ISLAND, showing the locations of "Proposed Main Building" (A - 1890-1897) and existing Main Building (B - a later addition to the plan). (from a copy located at the Statue of Liberty National Monument)

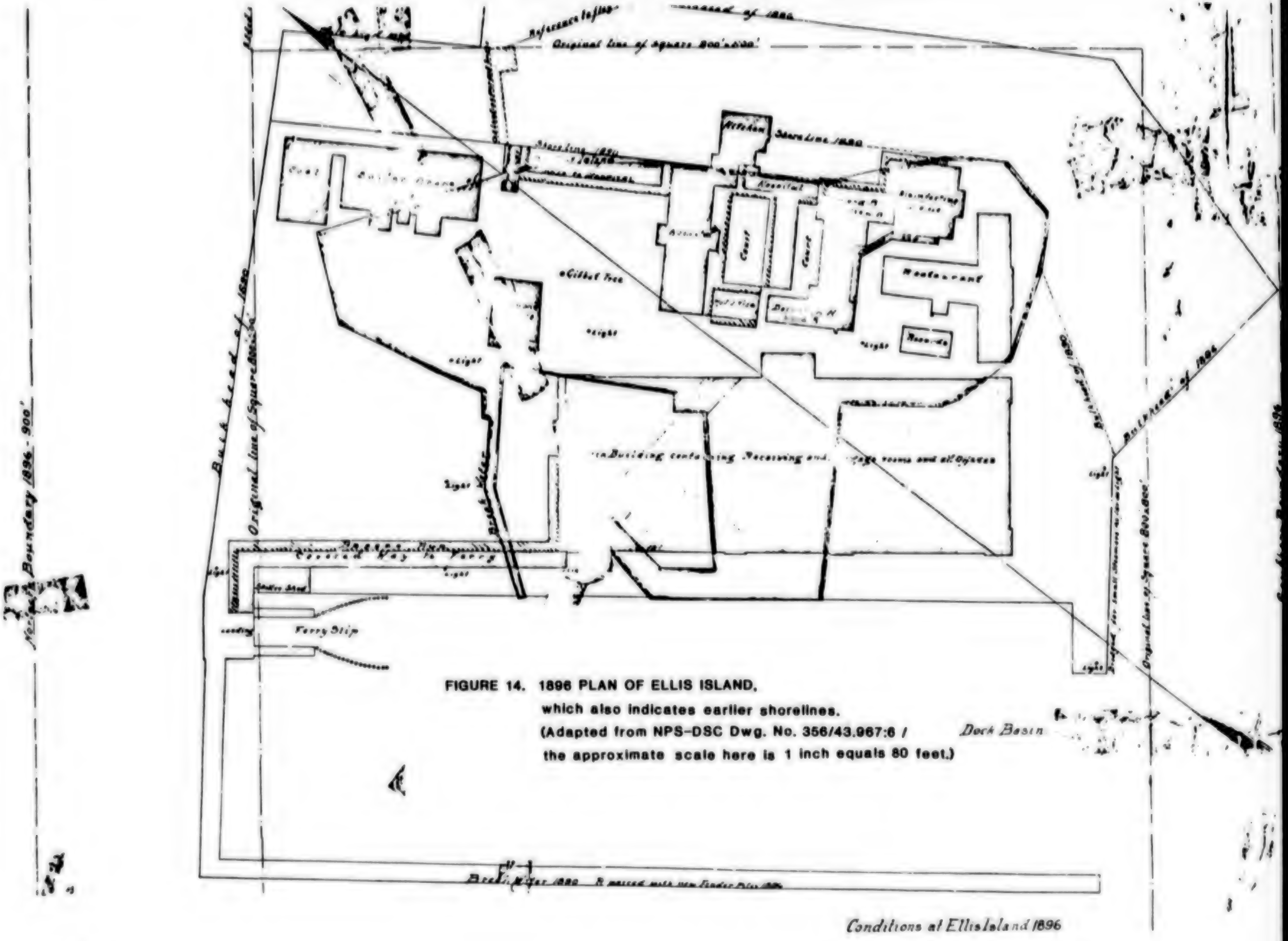

FIGURE 14. 1896 PLAN OF ELLIS ISLAND, which also indicates earlier shorelines. (Adapted from NPS-DSC Dwg. No. 356/43.967:6 / the approximate scale here is 1 inch equals 80 feet.)

southeast end of this kitchen, over much of the area formerly occupied by the battery. The small powder magazine was temporarily a "coal house" (NPS/DSC Dwg. No. 356/43.970:41), but it later became a records storage building (upon completion of a tank and coal house adjacent to the boiler and engine house). Shellhouse No. 2 was adapted for use as a detention building.

When the immigration station opened on January 1, 1892, work was still under way on many of the new buildings, and on retaining walls, grading, and filling (Unrau 1981:19-23). Although the construction and modification of buildings outlined above was accomplished by the middle of 1893 (figure 15), changes to the facilities, and to the island itself, continued up until June of 1897, when the first immigration station was destroyed by fire.

Between 1895 and 1897, a new cribwork bulkhead was constructed along the northeast side of the island, and with filling behind the new bulkhead, the island's size was increased by roughly 3 acres. The detention building was changed by 1896 from a single story building (BCT 1980:5-8) into a two-story structure having a southwest facing loggia and a flat, fenced roof area (Stafford 1925:22-23; also compare the c. 1893 photograph, figure 15, with the 1896 photograph in Pitkin, 1975:18). This latter area was presumably intended for recreational use by detained immigrants. An open-space "temporary detention pen" was also constructed and employed during 1896 and 1897. About the same time a small building of unknown function was constructed at the northwest end of the "Annex to Hospital" north of the insane hospital (former Shellhouse No. 1).

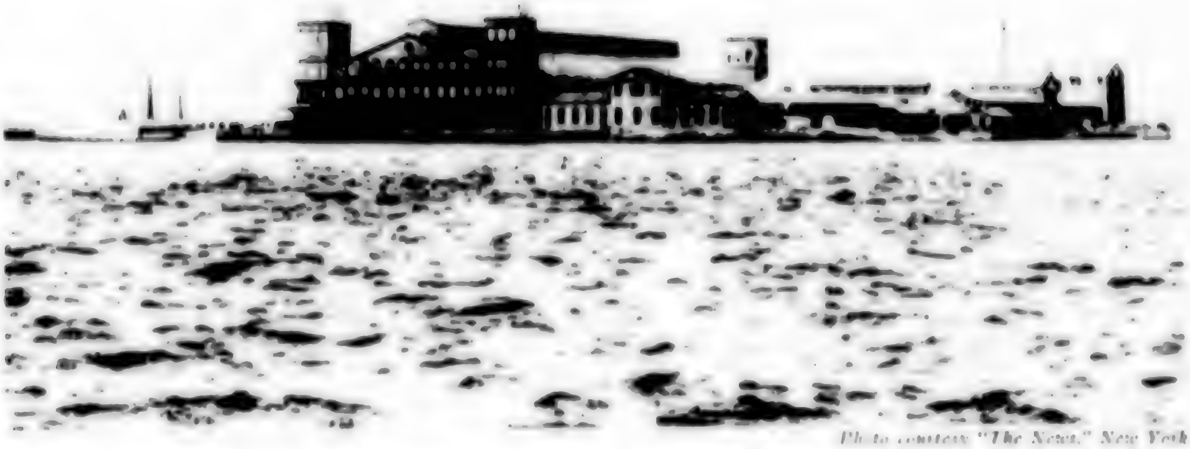

Photo courtesy "The News," New York

ELLIS ISLAND BEFORE THE FIRE WHICH DESTROYED SO MANY BUILDINGS THAT A NEW PLAN FOR IMPROVEMENT WAS MADE POSSIBLE

Figure 15. The First Immigration Station on Ellis Island, c. 1893, viewed from the east. The buildings, from left to right, are: main building (with corner towers), restaurant (with two-story center section), wing of the detention building (low, hipped roof), insane hospital (in background, with ventilating skylight atop hipped roof), hospital building C (in foreground, with small dormer), annex to the hospital (in background, with long gable roof), hospital kitchen (small building in foreground), boiler and engine house, and tank and coal house.
(Courtesy of the New York Public Library.)

A disinfecting house (a bathhouse and laundry for immigrants and their clothing and bedding) was built east of the detention building in 1897, and a covered passageway and baggage run was constructed between the west corner of the main building and the ferry landing that same year. A new landing pier, at the south end of the island, was also completed in 1897. Two days before the fire, telephone and telegraph links with New York City were established (Unrau 1981:23).

Shortly after midnight on June 15, 1897, a fire broke out, apparently in the kitchen and restaurant, which quickly destroyed nearly the entire station, in large part because all of the new buildings, including the main building, were of frame construction. Only the surgeon's quarters and the buildings comprising the power plant survived the fire. Although the masonry walls of the former powder magazines and shellhouses remained standing, their interiors were gutted and their structural integrity destroyed (Unrau 1981:25-26). The boardwalk fronting the ferry basin, and possibly at the margin of the island in other areas, also survived the fire.

Architectural descriptions of the buildings comprising the first (and the second) immigration station are provided, along with copies of several contemporary plans, sections, and elevations, in the Historic Structures Report (HSR) prepared by Building Conservation Technology/The Ehrenkrantz Group (BCT 1980:3-30). Harlan Unrau's HSR, concerned specifically with historical data, provides a detailed review of the contracting done for construction of the first station (1981:9-26). Some archeologically significant details are not discussed in these studies, however, in particular the use of masonry in the foundation of the main building, the locations of large cisterns for fresh and salt water, and the placement of many utilities within an extensive network of concrete tunnels.

The foundation of the main building consisted mostly of pilings driven 16 to 30 feet below the planned level of the structure's sills, but where the building overlapped the area of the original island, masonry piers were constructed. Both the major groups of pilings and the piers were spaced 16 feet apart on the building's longitudinal axis (northwest-southeast), and 18 to 20 feet apart on its transverse axis (northeast-southwest). The piers were 2.5- or 3.0-feet square (the evidence in NPS/DSC Dwg. Nos. 356/43.970:8 and 43.970:9 is inconsistent) and they extended 3.5 to 6.5 feet below the sill level. They were set on 1.0-foot thick, 4.5-feet square, spread footings, and were interconnected transversely by 1.5-foot wide walls which also rested on spread footings. The piers along the northeast margin of the building were also interconnected longitudinally by 1.5-foot wide walls. The elevation of the main building's sills was probably about 3.0 feet above high water. The elevation of the building's first floor, 2 feet higher than the sills, would have been about 7.25 feet A.M.S.L. (above mean sea level). Figure 16, adapted from NPS/DSC Dwg. Nos. 356/43.970:8 and 43.970:9, gives a plan and profile of the foundation.

The large concrete cisterns for fresh water collection and storage were located in an area of about 3,200 square feet between 25 and 65 feet northwest of the insane hospital (see figure 17). Rain water from the roofs of the buildings on the island was led to these cisterns. The system apparently proved unreliable, however, as had an artesian well contracted for in 1890. "Finally, the whole supply of water,

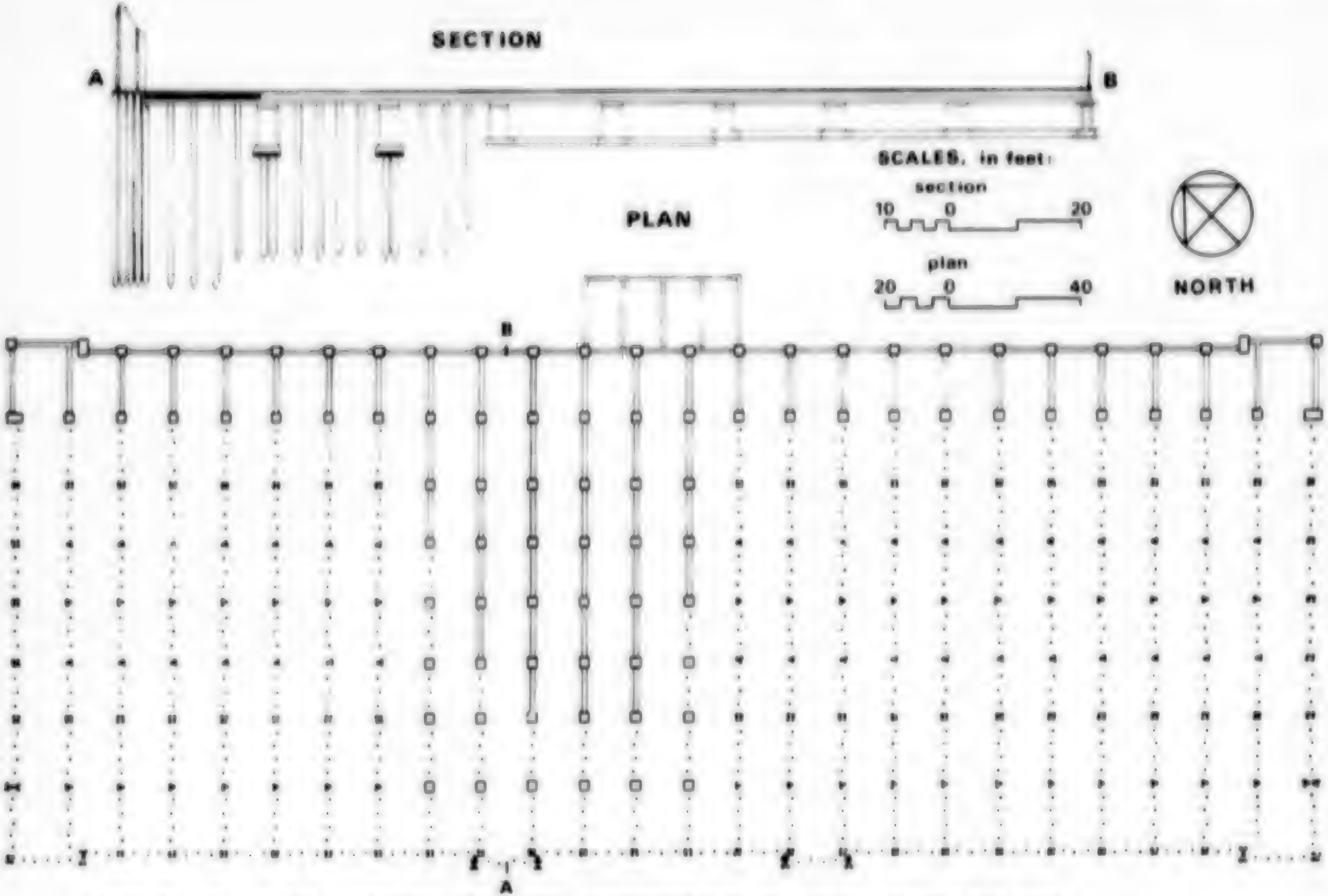

FIGURE 16. PLAN & CROSS-SECTION, FOUNDATION OF FIRST MAIN BUILDING

(from NPS-DSC Dwg. Nos. 356/43.970:8 & 9)

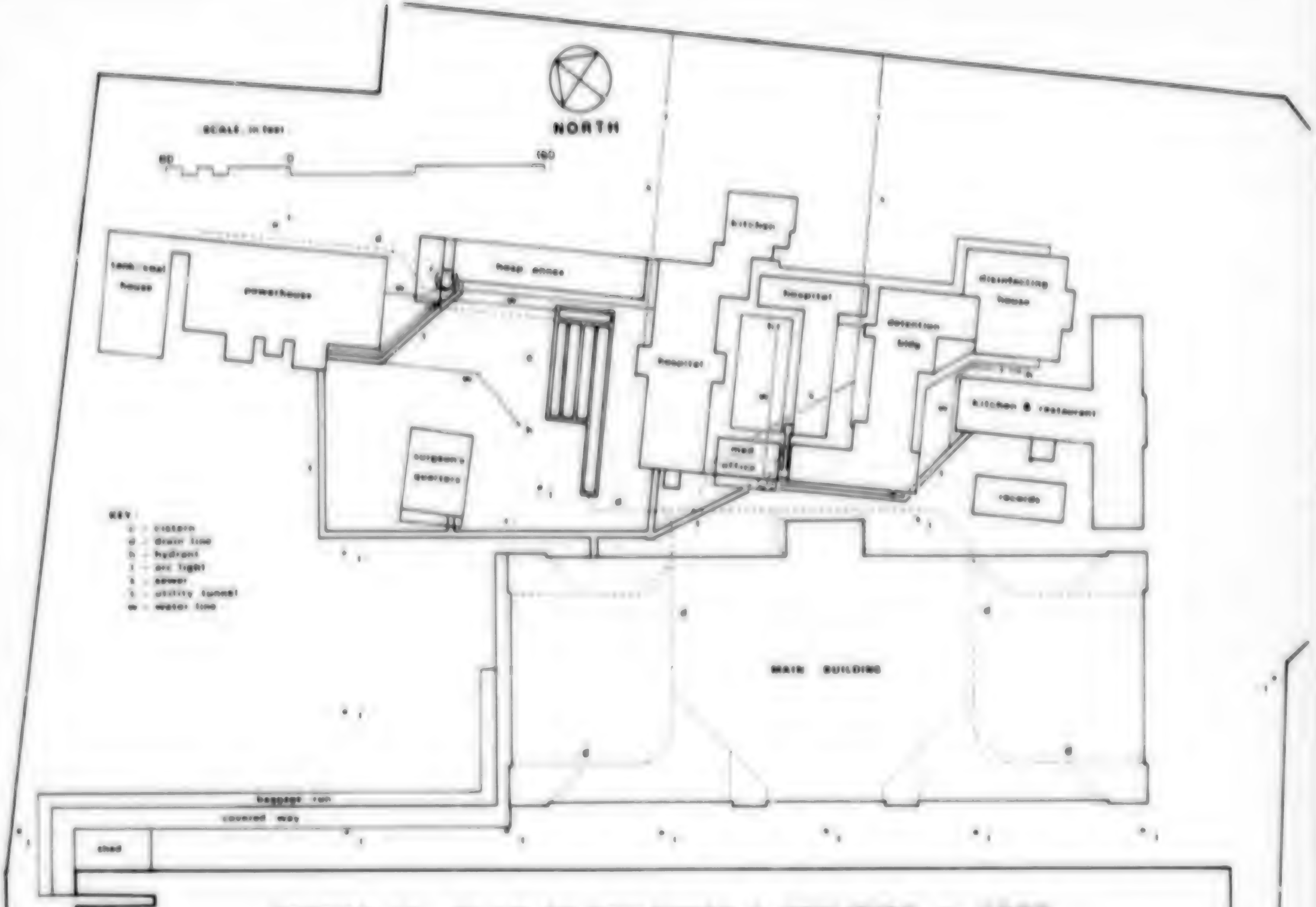

FIGURE 17. PLAN OF BUILDINGS & UTILITIES, c. 1897
(adapted from NPS-DSC Dwg. Nos. 356/43.967:6 & 970:22, 33, 41, & 42)

which amounted to nearly 20,000 gallons a day, had been brought from Manhattan by steamers and pumped into storage tanks on Ellis Island" (Unrau 1981:48). The island was dependably supplied with salt water by means of a circular cistern, 12 feet in diameter, about 40 feet southeast of the boiler and engine house. The top of the fresh water cisterns was approximately 5.0 feet A.M.S.L., and their depth was about 12 feet.

The network of concrete tunnels for various utilities (except drains and sewers) was laid out as shown in figure 17. The top of the tunnels was about 6.0 feet A.M.S.L., their depth was from 4.0 to 8.0 feet, and their basal width from 4.5 to 6.0 feet. The locations of sewers are not fully indicated on plans from the period, but the locations of at least some exterior arc lights and fire plugs are shown.

Both Unrau, in his Historic Resource Study (1984), and Thomas M. Pitkin, in his administrative history (1975), discuss immigration policy, the process of inspecting and admitting or excluding immigrants, and contemporary reactions to the operation and appearance of the station. Descriptions of the first immigration station vary considerably. "It looks like a latter-day watering place hotel" wrote Julian Ralph for Harper's Weekly shortly before the station opened (1891:821), and an account in the New York World after its opening stated that "everything worked like a charm and the prediction was general that under the new conditions the comfort and safety of the immigrants will be all that can be desired." Others found that the large registration room on the second floor of the Main Building "resembled a prison rather than a reception center for immigrants"

(Unrau 1981:20). The impressions and experiences of immigrants who came through the first station were presumably similar to those of immigrants who came through the second station. A selection of such impressions, from various books, periodicals, letters, etc., is provided in Unrau's HRS (1984:1083-1123).

One clearly evident aspect of the station was its pervasive institutional nature. The task of receiving and inspecting thousands of immigrants each day, of lodging and feeding the hundreds that were detained, and of caring for the scores of ill and diseased, could not have been accomplished otherwise. The routines governing the activities of immigrants were structured around a few basic elements: immigrants needed to be inspected for possible disqualification; they needed to be provided with meals and, if detained on the island, with beds and bedding; and they had to be prevented from eluding the process of admission, or exclusion. Would-be immigrants kept on the island were assigned to detention rooms (originally called "pens") and to barracks, and were of course subject to schedules for sleep, meals, recreation when available, and other activities (or more commonly inactivity — just plain waiting). Surveillance was more or less constant. Visitation to the island by immigrants' friends and relatives, and others, was also tightly controlled. The consequent patterning of use of interior and exterior spaces, combined with common institutional modes of collecting and disposing of debris, would have limited the locations, variety, density, and significance of artifact deposits. The small possessions of steerage passengers, let alone parts of larger possessions, are generally unlikely to have found their way into archeological contexts on the island. Most immigrants were only on the island briefly, and those detained were restricted in their movements and activities. Besides, the objects they had brought with them are likely to have been carefully conserved. Nonetheless, a scatter of small items, such as combs, coins, pins, keys, etc., probably came to rest on the surface of the island during this period, especially in the vicinity of the restaurant and the disinfecting house, where groups of immigrants would likely have had to wait turns. Two other probable waiting areas -- the front of the main building and the ferry landing -- had surfaces of boardwalk planking, and probably less accumulation of cultural material.

With regard to institutional collection and disposal of refuse, an 1892 listing of the Ellis Island workforce indicates that several laborers were employed. At least some of them are likely to have had the same types of janitorial duties as were detailed in an 1903 description of the work done by the various divisions of the immigration station staff (Unrau 1984:358). Contracts for the removal of refuse from the island by barge were routine during the early years of the second station, and similar arrangements are likely to have been made during the first station's existence. There is no evidence, however, that refuse was incinerated during the 1890s, as it was in later years. Despite refuse collection and disposal routines (routines based, like the medical inspection of immigrants, in large part on a concern for public health), concentrations of culinary refuse (ceramic and bottle fragments, bone, etc.) may have accumulated in the vicinity of the kitchens on the island. But it was possibly more common for such refuse to have been dumped over the seawall when collection routines proved inadequate.

The most abundant varieties of artifacts from this period are probably architectural. The initial construction of new buildings and modification of old would have resulted in some wastage of structural fabric, nails, and hardware, much of which would have been deposited archeologically on the island. Even more significant, from an archeological as well as a historical perspective, was the near total destruction of the first immigration station by fire in 1897. Not only would the fire have resulted in the reduction of buildings to charred concentrations of architectural materials, along with furniture hardware and various other kinds of artifacts, but it also transformed structural elements, such as foundations, pilings, and utility tunnels, into archeological features. The degree to which these artifact concentrations and features survived the subsequent development of the second immigration station will be discussed below.

The Second Immigration Station

Ellis Island is listed in the National Register of Historic Places largely because of the second immigration station. The detailed history of the station and of its physical development is provided in reports by Pitkin (1966, 1975), Unrau (1981, 1984), Building Conservation Technology/The Ehrenkrantz Group (1980), and Beyer Blinder Belle/Anderson Notter Finegold (1984). Consequently, only an outline of that history is provided here.

Following the fire which destroyed the first station, the commissioner of immigration for New York, Dr. Joseph H. Stenner, observed that:

> Ever since I have been in office ... the fear of something like this fire has haunted me, and now that it has come and no lives were lost, I am glad of it. A row of unsightly,

> ramshackle tinderboxes has been removed, and when the Government rebuilds, it will be forced to put up decent fireproof structures.
>
> [New York Tribune, June 16, 1897]

Planning for construction of new, fireproof buildings began almost immediately, and within two weeks after the fire there were general proposals and cost estimates regarding what would be needed. Among the proposals adopted was one to enlarge the island. Congressional authorization was quickly secured, along with an appropriation of money for plans, drawings, and specifications. Subsequent to a competition among five architectural firms, the contract for planning and designing the major buildings of the second station was awarded to Boring & Tilton, of New York City, in December, 1897 (Unrau 1981:27-35).

Removal of debris left from the fire was evidently accomplished in September and October of 1897, but material which could safely be left on or below the island's surface probably was. While debris removal was under way, the superintendent of repairs, Alfred B. Fry, was instructed to include with the proposal for enlargement of the island "the breaking down of all old building walls on the island damaged more or less by fire, and [to] provide for their use in the crib-work, ballast, or filling" (Unrau 1981:30-31).

The island was to be enlarged by filling an area 800 feet long by 160 feet wide on the opposite side of the ferry basin from the existing island. In January, 1898, a "contract was let to Warren Rosevelt ... to furnish labor and materials required for the crib bulkhead, dredging, and filling necessary to enlarge the island" (Unrau 1981:35). The existing cribwork along the northeast side of the area, constructed as a breakwater eight years previously, was not strong enough to support the pressure of fill. Reconstruction of this portion of the bulkhead, and filling behind it, resulted in a six-month delay in completing the enlargement (Unrau 1981:35-36). The new area became known as Island 2.

Design of the new buildings proceeded, although not without substantial changes in the arrangement and plans for the structures. One of the more significant initial changes was a decision to raise the grade of the main building, and of the island in its vicinity, by two feet (Unrau 1981:36).

Construction of the new main building, in an area overlapping the site of the former main building, began late in 1898. The surgeon's house, which had survived the fire, served once again as a construction office. A temporary frame building used by the contractors stood southwest of the main building during its construction.

In the course of foundation work on the building early in 1899, cisterns and structural remnants of former buildings on the island were encountered. These features were stabilized or removed to allow work to proceed. A drawing made at this time (NPS-DSC Dwg. No. 356/41.962:29) shows the relationship between the new building's north corner and the large set of c. 1891 cisterns, making possible a fairly precise "overlay" of the successive structures (figure 18).

The general depth of excavations within the basement area corresponds to an elevation of about 5.0 feet A.M.S.L. Footings were placed from 4 to 7 feet deeper, and along the southwest margin of the structure they rested on pilings. The footings of the first main building are likely to have been below the level of the new basement, and to have survived its construction. The footings of earlier nineteenth century buildings in the area may also have survived.

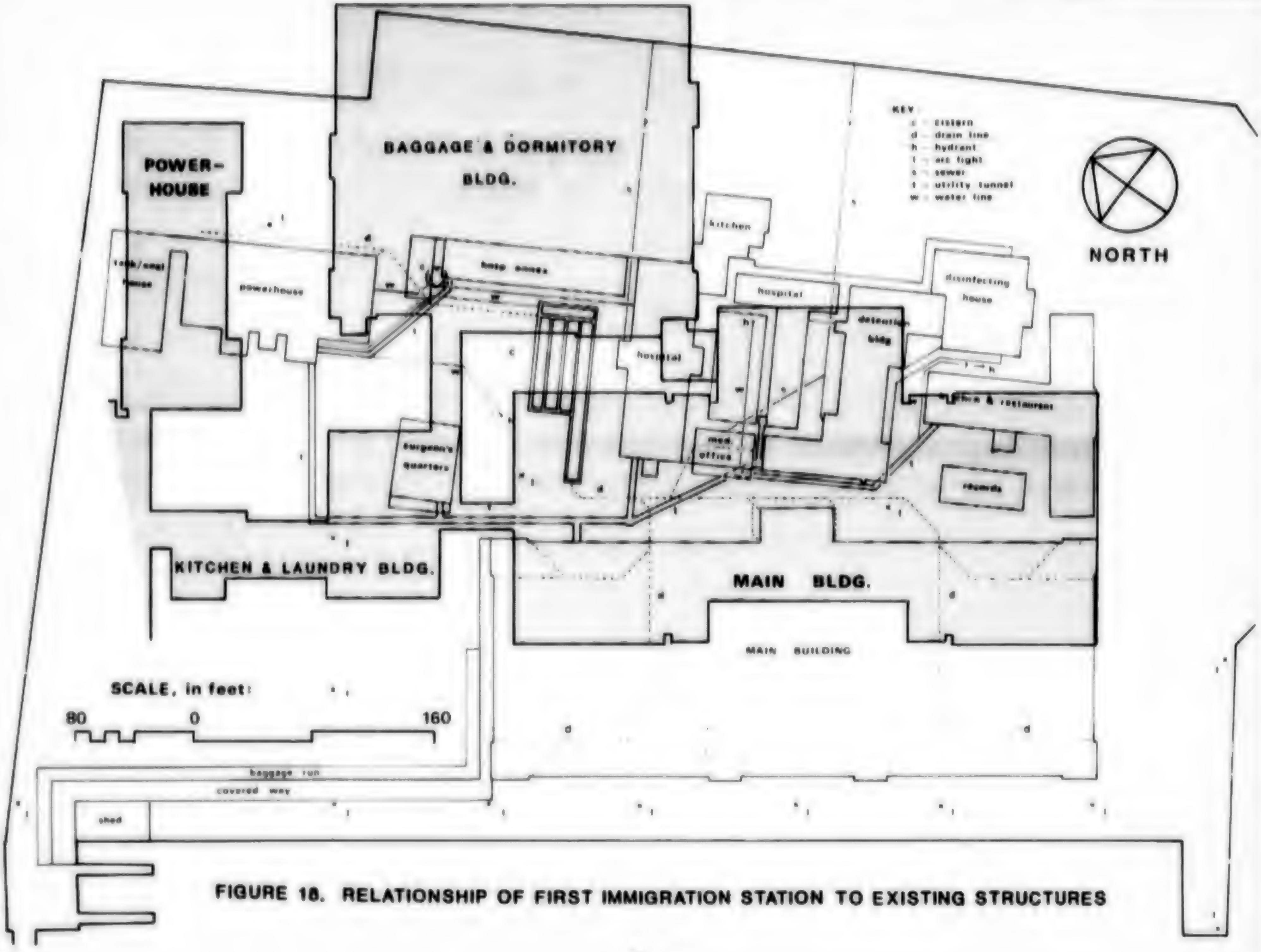

FIGURE 18. RELATIONSHIP OF FIRST IMMIGRATION STATION TO EXISTING STRUCTURES

As the main building was nearing completion in 1900, work began on the other new buildings of the second immigration station. The bath, laundry, kitchen, and restaurant building, later designated the kitchen and laundry or K and L building, and the new powerhouse were begun in May of that year. Construction of the hospital on the newly filled Island 2 began in March. A hospital outbuilding, a new surgeon's house, a ferry building, and covered ways were begun later in 1900. The main building, and with it the second immigration station, opened on December 17, 1900, three and one-half years after destruction of the first station. Although most of the additional buildings were to be completed before the end of 1900, the first one finished -- the K and L building -- was not opened until June, 1901. Use of the new powerhouse and of the hospital and its annexes began early in 1902. The K and L building was constructed with a basement at the same level as the main building's, and the old surgeon's house, formerly the gunner's quarters, was demolished to make way for it. Buildings were located in the same area during the late eighteenth and early nineteenth centuries, but there were no reports that remnants of these buildings were encountered during construction.

The new powerhouse lacked a basement, and it was located almost entirely on a part of the island created between 1890 and 1897. A portion of the earlier powerhouse, together with the tank and coal house, needed to be demolished to begin construction of the new building. After supplying the needs of the second station during its first year of operation, what remained of the old powerhouse was also demolished. One further element of the new facilities was an incinerator, identified at the time as a garbage and refuse crematory. This structure, 16 feet wide by 28 feet long, was built late in 1901 immediately northwest of the new powerhouse.

The new hospital and the surgeon's house on Island 2 were provided with basements which routinely flooded during periods of uncommonly high tide. This fact necessitated construction of a relatively large sump and pumphouse south of the hospital and the raising of the basement floor under the surgeon's house.

Landscaping of Islands 1 (the original island) and 2 was accomplished soon after completion of the buildings. Areas adjacent to all the buildings, and walkways to the docks, were paved with concrete. The dock surfaces consisted of wood planking, and they were located on island no. 1 along the ferry basin and at the north corner of the island in the vicinity of the powerhouse. (A 1913 plan of the island indicates that the latter docks were for coal barges and ash scows; NPS-DSC Dwg. No. 356/43.468:8.) Boardwalk extended around the point at the southeast end of the island. Paths paved with cinders were located along the northeast edge of Island 1 and around all of Island 2 (except perhaps its northwest end). Following placement of roughly 7,000 cubic yards of loam, hedge enclosed formal lawns were established together with flower beds. Additional characteristics of the initial landscape design are described in the Historic Structure Report prepared by Beyer Blinder Belle/Anderson Notter Finegold (1984:44-49).

The processing of immigrants at the new station was done in much the same way as at the earlier station, with the same consequence that artifacts reflecting the processing are likely to be scarce. The overall impression conveyed by the physical plant of the new station was generally more favorable than that of the first, although one author described the buildings as "very ugly" (Unrau 1981:99-113). A more significant problem was corruption among the staff and concessionaires on Ellis Island, a problem which was to a great extent corrected during 1902, although never entirely eliminated (Pitkin 1975:65-66, 143).

"Of all the problems that beset the administration of Ellis Island, none was more hampering or more persistent, and none gave rise to more criticism, than the lack of adequate space" (Pitkin 1975:105). Most acute was the need for larger hospital facilities and for additional dormitory space for detained immigrants. Also needed was additional office and examination space and waiting space for immigrants who had been admitted to the country but had yet to travel to their destinations.

Between 1903 and 1905, additional dormitory and waiting space began to be provided. A large, permanent railroad ticket office, one story high and lacking a basement, was constructed at the north side of the main building, while a temporary "New York" waiting room was constructed north of the corridor connecting the main building with the K & L building. An "immigrants' friends" waiting room was built about the same time along the west side of the covered way between the Ferry House and the K & L building. A large, temporary barracks, of wood with a floor of concrete, was built north of the main building (figure 19).

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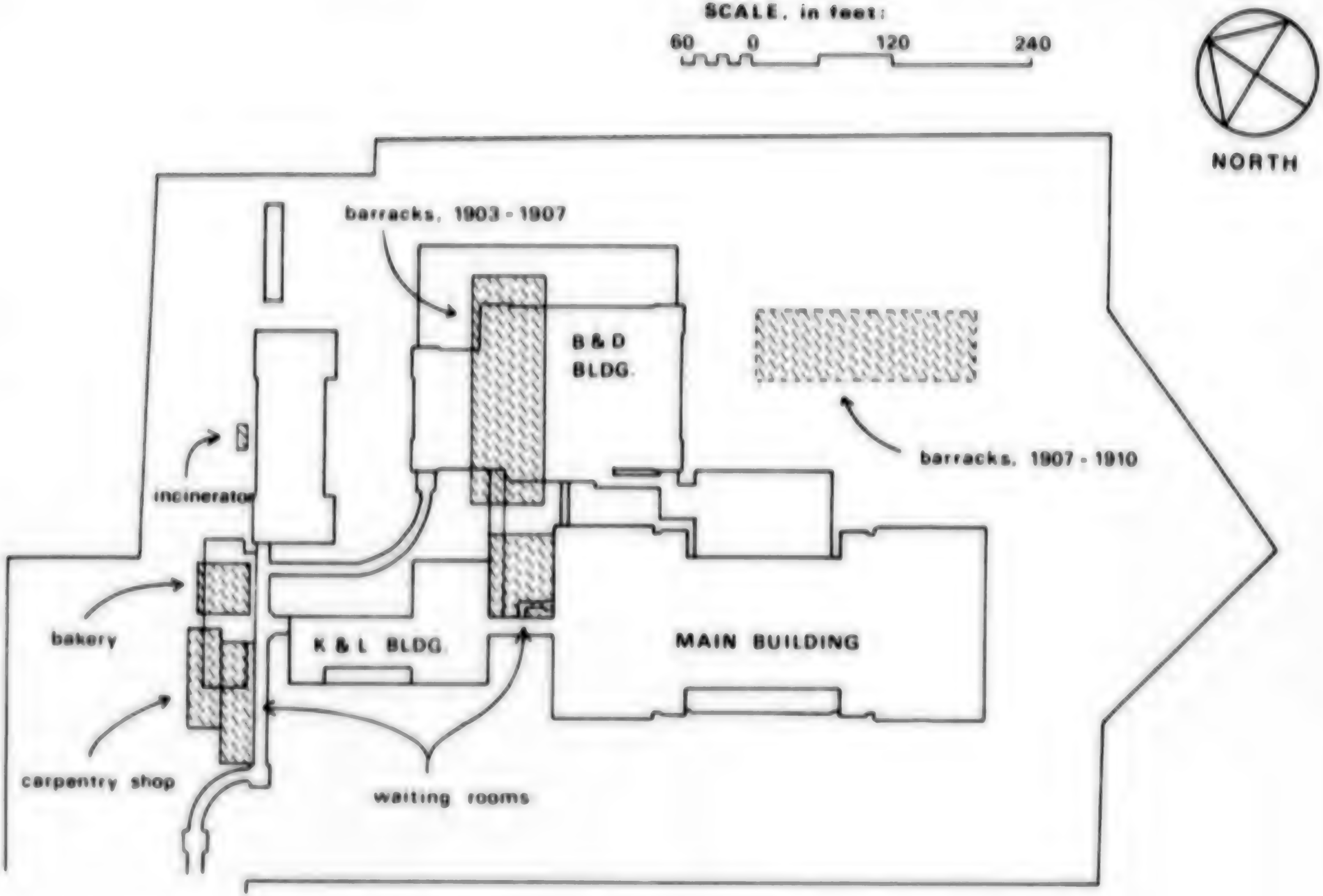

FIGURE 19. TEMPORARY BUILDINGS, ELLIS ISLAND, 1901 - 1911

A more permanent solution to the shortage of dormitory space was construction of a two-story, steel and masonry, baggage and dormitory (B and D) building, between 1907 and 1909. This building, located over the initial site of the temporary barracks, lacked a basement, but soil testing prior to its construction revealed obstacles that would be encountered in the course of driving piles for its footings. During "excavation of the site we encountered several old foundations and pipe chambers," noted the contractor in requesting a time extension on the contract. The contractor also made a claim for "removing old engine foundations, concrete walks, and pipe tunnels found in the excavation for foundation work of the building" (Unrau 1981:374, 378).

The temporary barracks was either moved or reconstructed directly north of the railroad ticket office prior to construction of the B and D building. When this barracks was demolished in 1910, a greenhouse was built on part of its concrete foundation (Tifft 1971; Unrau 1981:589).

Additional office and examination space was created in 1910 and 1915 by construction of third stories on the west and east wings of the main building. A third story was also added to the B and D building, along with a large, enclosed, dockside shelter, in 1913-1914. In 1914-1915, a large, masonry bakery and carpenter shop was built to the west of the K and L building. Prior to this building's construction, a frame building having the same uses, built sometime after 1901, occupied the same area.

Regarding the need for more hospital space, the surgeon in charge of the Medical Division recommended provision of additional facilities before the first hospital opened in 1902, and following its opening, the station continued to depend on other hospitals to handle their overflow and cases of contagious diseases. Between 1905 and 1911, the hospital facilities were slowly but very substantially expanded. In addition to more buildings on Island 2, another area of fill enclosed by crib work was created to the southwest, beyond another basin, and this new island -- Island 3 -- became the site of a multibuilding contagious diseases hospital. Evidently, the contagious diseases hospital at first lacked its own incinerator, and garbage there was disposed of by disinfecting it and dumping it into the harbor (Unrau 1981:533).

The first incinerator on Island 1 was replaced in 1911 by a larger one, built on a new concrete platform located just beyond the edge of the island, directly west of the location of the first incinerator. By 1913, outdoor privies were located at the north corner of Island 2, on the dock east of the baggage and dormitory building's east corner, along the bulkhead west of the bakery and carpenter shop building, and in the yard (the "New York Room Yard") at the north corner of the main building (figure 20). In 1916 only the last of these still existed (NPS-DSC Dwg. No. 356/43.967:7). About 1915 a recreational structure, built and staffed by the American Red Cross and used primarily as a hall or auditorium, was constructed on Island 2 near the ferry building.

Improved recreation was also the objective of certain landscape alterations made in 1915: the area northwest of the main building was provided with benches and playground equipment, and separated from the cinder walk at the island's edge by a wire netting fence (Beyer Blinder Belle/Anderson Notter Finegold 1984:54).

Development of the physical plant of the second immigration station stabilized after 1915. Although interior modifications and improvements continued, more new buildings were not constructed until the 1930s. However, construction of new masonry and concrete seawalls, in place of the earlier, rock-filled, timber crib bulkheads, got under way. This project, begun about 1914 along the northeast side of the ferry basin, was carried out sporadically until the 1930s, when it was completed together with a final enlargement of the island. Because the new seawalls along the ferry basin were located on the basin side of the previous bulkheads, the width of the basin was reduced by between 25 and 30 feet. On Island 1, the new seawall facilitated the replacement, around 1915, of the former boardwalk alongside the basin with a broad, concrete walkway.

The effects of World War I on Ellis Island were numerous. Several hundred men unemployed in part because of the war were sheltered on the island during the winter of 1914-15. More dramatically, on July 30, 1916, there was "a series of tremendous explosions at Black Tom Wharf ... less than a mile from Ellis .... It was afterwards determined that the explosions were the work of German saboteurs." These explosions inflicted nearly a half-million dollars in damages on the immigration station, but "not a single life was lost and there were no serious injuries" (Pitkin 1975:118-119). German seamen were interred on the island in April, 1917, when direct U.S. participation in the war began, and other aliens suspected of being spies or saboteurs were also kept

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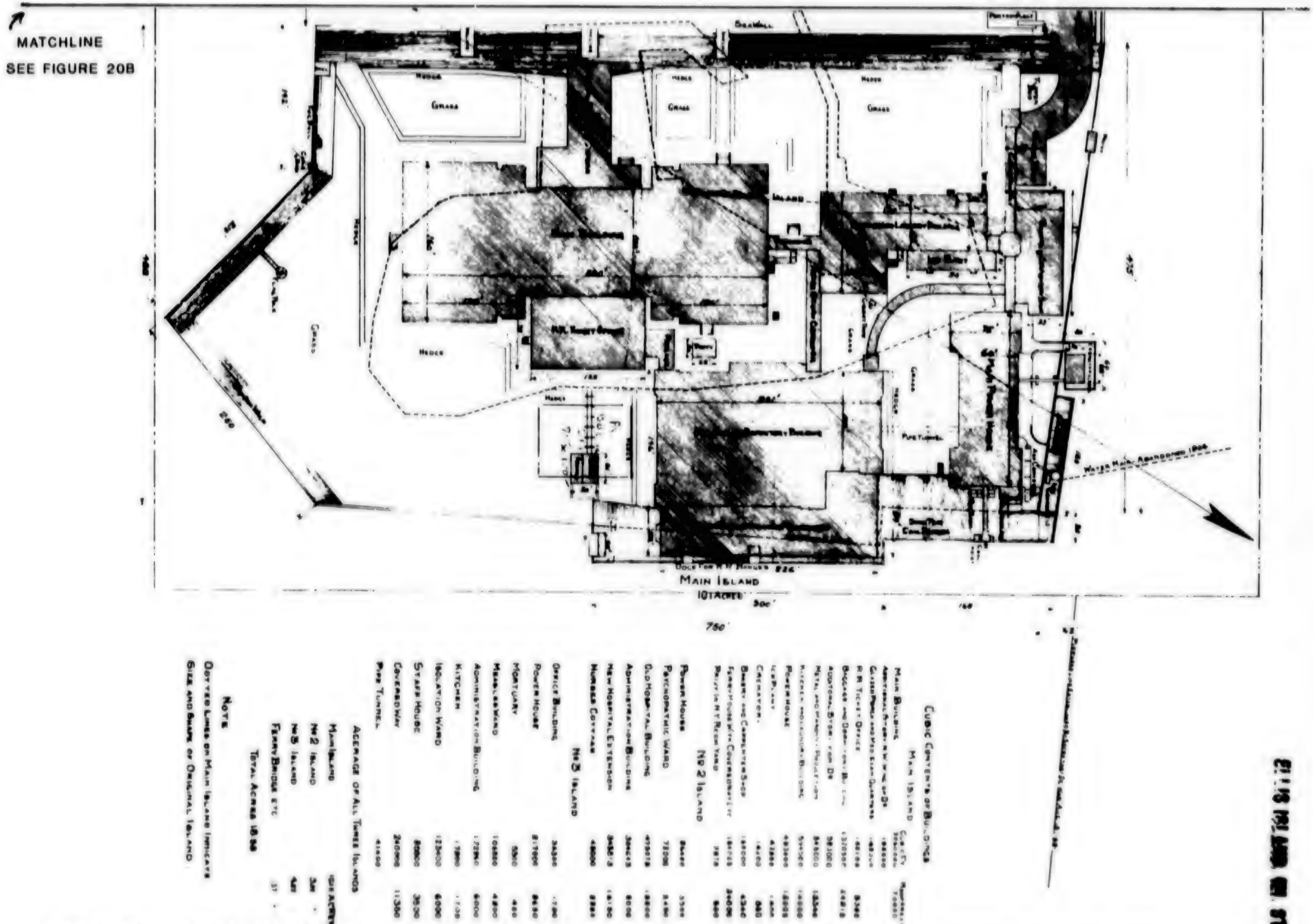

FIGURE 20A. 1913 PLAN OF ELLIS ISLAND -- ISLAND 1

(from NPS-DSC Dwg. No. 356/43.968:8 /not to scale)

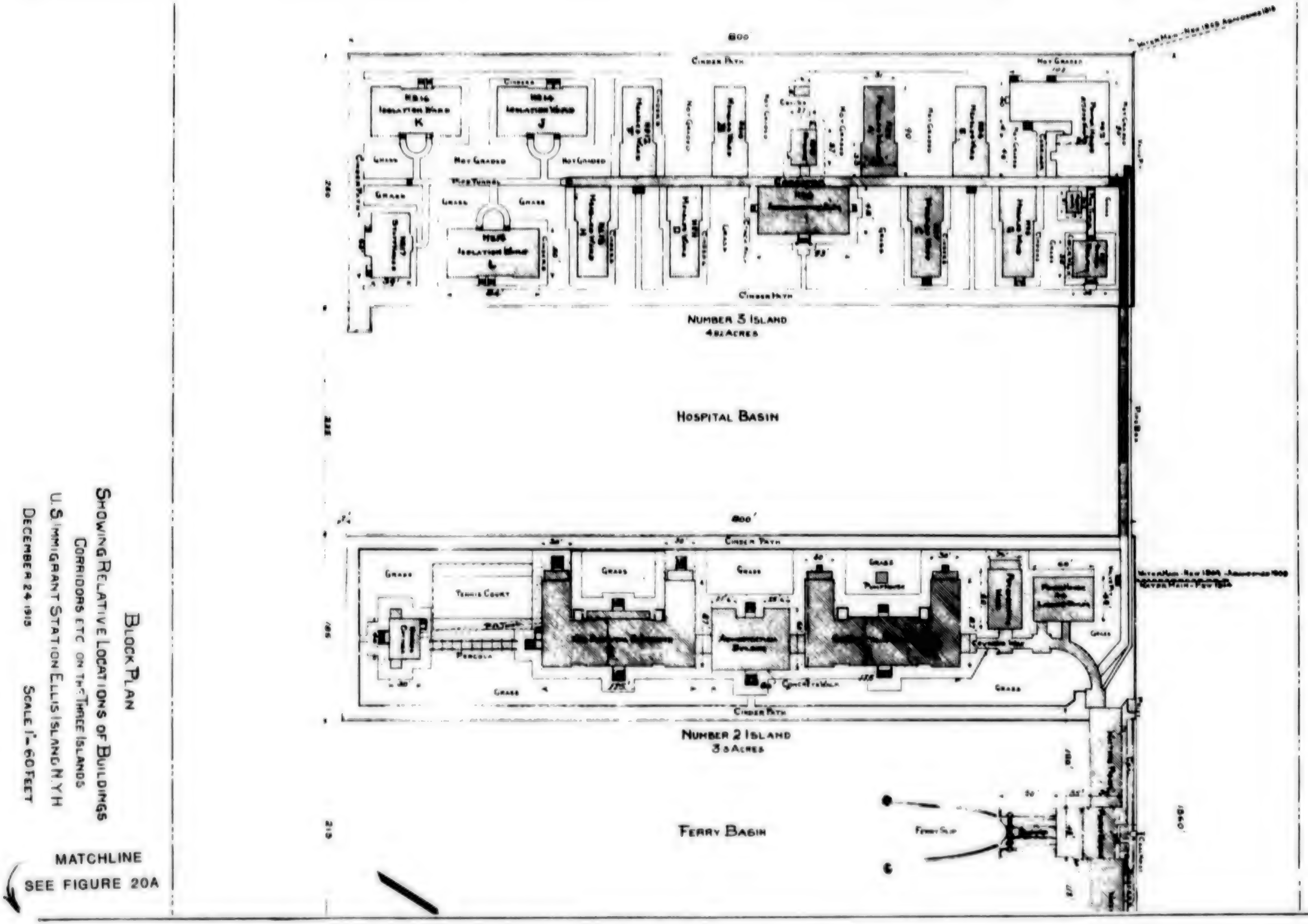

FIGURE 20B. 1913 PLAN OF ELLIS ISLAND -- ISLANDS 2 & 3

(from NPS-DSC Dwg. No. 356/43.968:8 / not to scale)

under guard on the island. During 1918 and 1919, the Army took over the hospital on Islands 2 and 3 to provide for the medical needs of returning servicemen, while the Navy made use of the B and D building and parts of the main building. Perhaps the most pronounced effect of the war, however, was a reduction of more than 95% in the number of immigrants passing through the Port of New York between 1914 and 1918. The staff of the station was consequently also greatly reduced (Unrau 1984:734-743, 773799).

Less direct, although ultimately more pervasive effects followed the war. In its immediate aftermath, hysteria regarding the radical politics of many aliens resulted in Ellis Island serving for a short while primarily as a detention and deportation center. During 1920 this "red scare" subsided, while at the same time immigration revived. But partly as a consequence of the war, immigration policy soon became much more restrictive, especially through establishment of national origin quotas (Pitkin 1975:121-136). After 1924, when the inspection of would-be immigrants at consular offices overseas began to be instituted, many of the original purposes for which the station had been built largely ceased to exist. As a consequence, the detention of aliens and their deportation dominated the last years of the Ellis Island immigration station. Some of the impressions of immigrants, detainees, and other contemporary witnesses to the operation of the immigration station during the years following 1924 are provided in Unrau's HRS (1925-30 period, 1984:906-914; 1931-33 period, 1984:932-939, 946-948; 1942-43 period, 1984:835-839; 1950-51 period, 1984:981-988).

The hospital on Islands 2 and 3, operated by the U.S. Public Health Service and nominally a marine hospital prior to 1924, increasingly came to serve as a true marine hospital. By 1929, only one quarter of the patients were immigrants, while three quarters were merchant marine and U.S. Coast Guard beneficiaries (Unrau 1984:926).

A variety of additions and changes were made to the facilities on Ellis Island during the 1930s. The pumphouse and sump on Island No. 2 was replaced in 1930 by new pumps located near the northwest end of the island (Unrau 1981:473-474). The canopy in front of the main building was demolished in 1932, apparently because the pattern of moving people through the building had changed. The area where the canopy had stood was formally landscaped (Unrau 1981:181-187). Also in 1932, the power plant was switched over from coal to oil fuel (Unrau 1981:344-348). Two 250,000-gallon water towers and a 75,000-gallon water tank had been constructed between the powerhouse and the B and D building during the 1920s.

A 1933 plan of the island (figure 21) shows a few modifications of the landscape in addition to the large circular flower bed where the canopy had been. The flagstaff near the point at the southeast end of the island had been removed, along with a hedge which had separated the point area from the area directly northeast of the main building. This was evidently done to enlarge the "playgrounds" behind the main building. This recreation area was also now entirely enclosed by buildings and by fences (erected in 1931), reflecting the focus on detention.

During 1933, a commission was established to study the operations and facilities of the immigration station. The commission's report, issued in March, 1934, guided a program of improvements which would be

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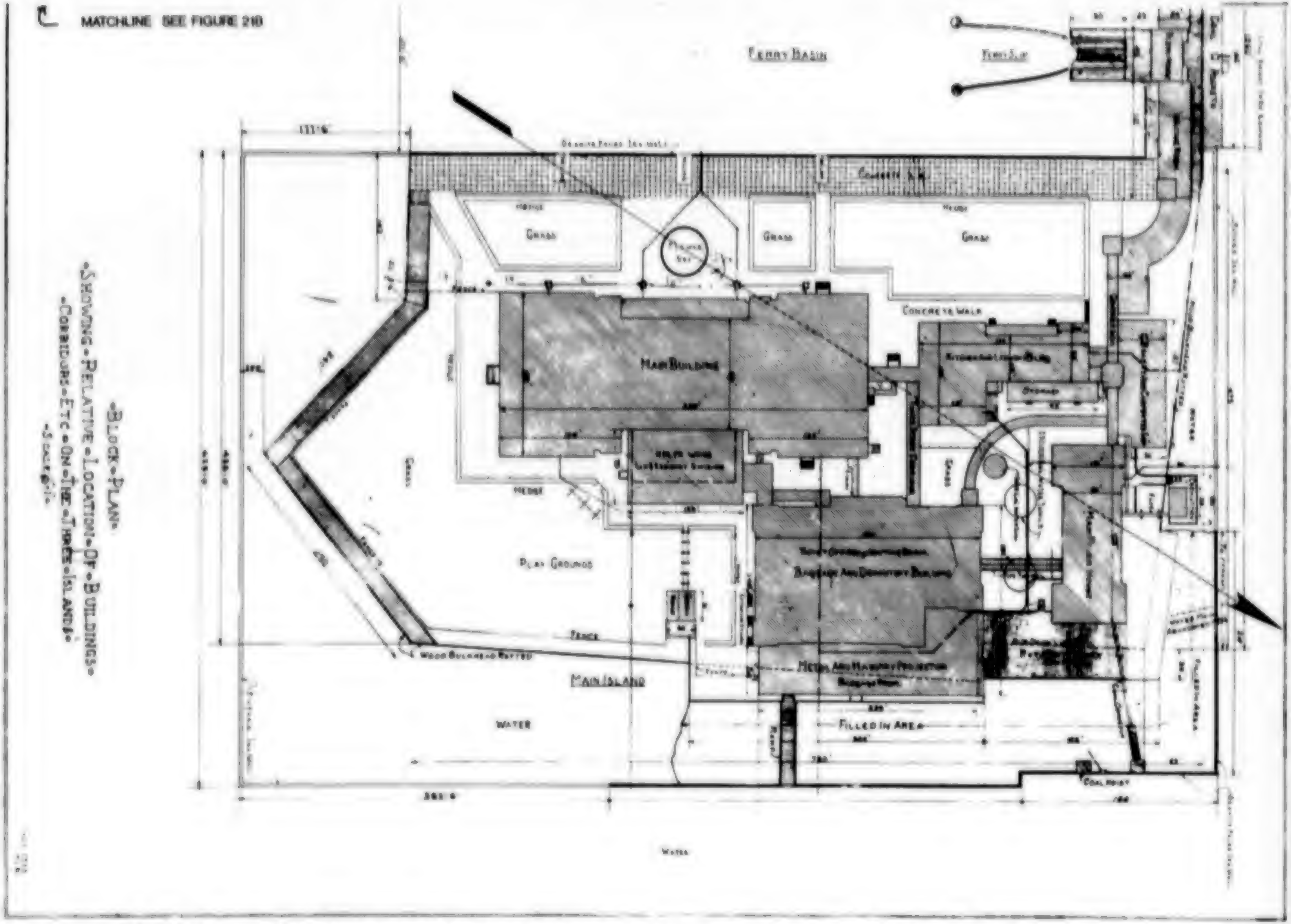

FIGURE 21A. 1933 PLAN OF ELLIS ISLAND -- ISLAND 1

(from NPS-DSC Dwg. No. 356/43,968:9 / not to scale)

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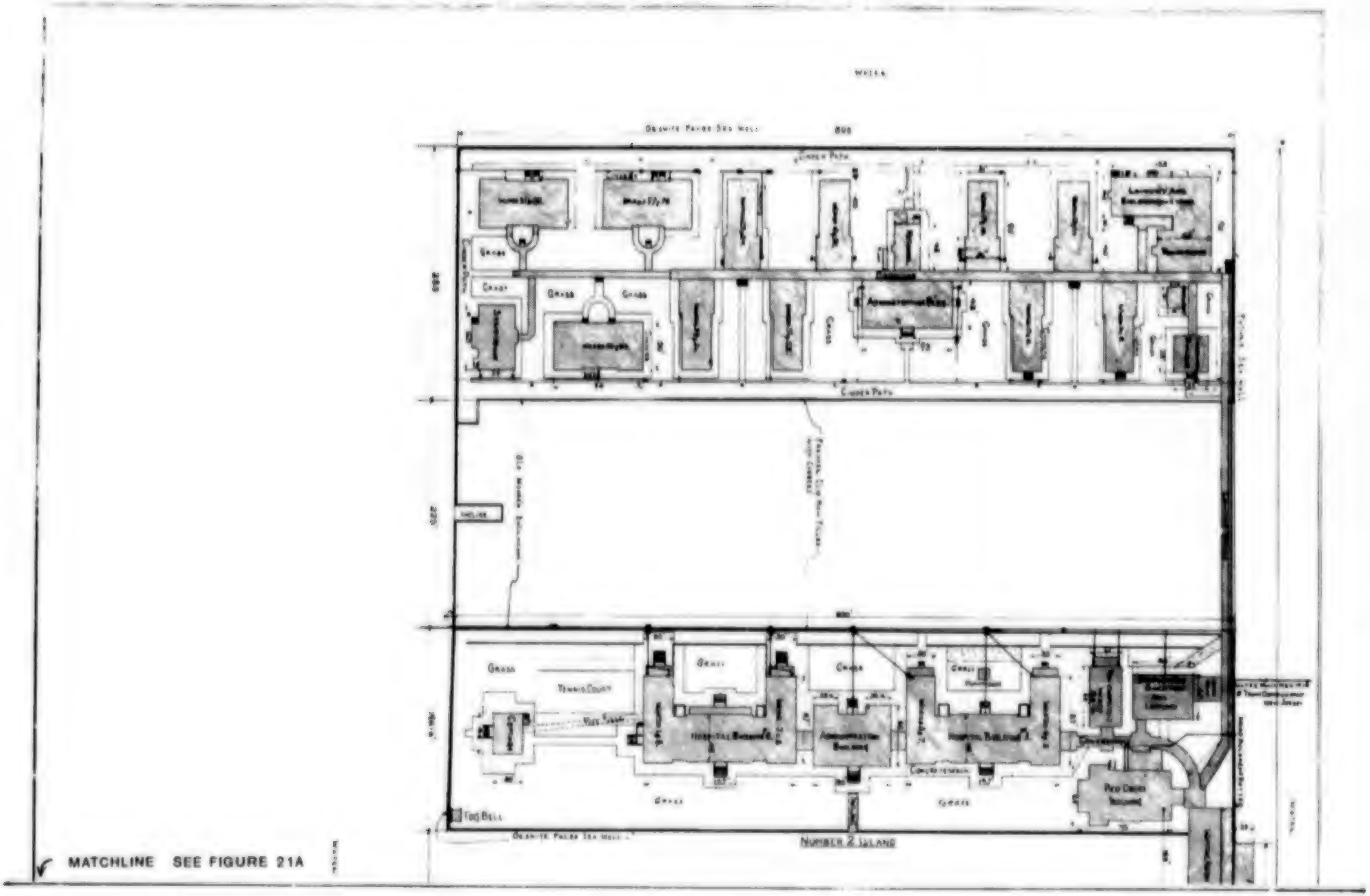


FIGURE 21B. 1933 PLAN OF ELLIS ISLAND -- ISLANDS 2&3 (from NPS-DSC Dwg. No. 356/43.968:9 / not to scale) the last major episode in the physical development of the station (Unrau 1984:941-942). The seawall project begun two decades earlier was completed, and the island was enlarged to its present size by the filling of new areas along its northwest and northeast sides. Filling of the area between Islands 2 and 3, which had begun during the 1920s, was also completed. This involved "removing 2 feet of the existing cinder fill and replacing it with 18 inches of subsoil and 6 inches of topsoil preparatory to the planting of grass and shrubs" (Unrau 1981:491).

Two additional buildings were constructed in the newly filled area at the northwest side of the island between 1934 and 1936. A masonry ferry building replaced the former, frame ferry house and waiting rooms, and behind it in the center of the area a new immigrant building was constructed. It was anticipated that use of the latter building would allow the great hall and other areas in the main building to be refurbished for indoor recreation and other activities. For various reasons, however, the new immigrant building was not used until it was occupied by the U.S. Coast Guard in October, 1939.

At the northwest end of the area between Islands 2 and 3, a new recreation building and an open recreation shelter were constructed, while another recreation shelter and a new greenhouse were built at the north corner of Island 1. The old American Red Cross recreation building and the former greenhouse were demolished. The "surgeon's house" at the southeast end of Island 2, which for several years had been quarters for nurses, was also demolished. Replacement quarters were presumably provided in other buildings.

A modified landscape plan for the island was developed and began to be implemented. The concrete walkway around the main building was reconstructed to provide planting beds adjacent to the building, while the walkway at the southeast end of the building was eliminated. The boardwalk along the edge of the island's southeastern point was, upon completion of the seawall there, replaced with a concrete walk, and a flagstaff was erected at the point. Initially, c. 1936, a single large recreation area was provided on Island 1, but by 1939 this had been divided into two "exercise yards." A third exercise yard, also fenced, was provided between wards 13 and 17 on the southwest side of Island 3 for use by hospital patients who were "warrant cases" (aliens being deported). A 1939 planting plan (NPS-DSC Dwg. No. 356/43.968A) shows tennis courts in the area between the corridors to wards 28 and 31 on Island 3, and southwest of the new immigrant building.

The effects of World War II on Ellis Island began with the October, 1939, establishment of a U.S. Coast Guard training station. The Coast Guard took over the empty new immigrant building and the ground floor of the B and D building for the purpose of training recruits for neutrality patrol duty. In March, 1940, the guardsmen also took over the exercise yard northeast of the B and D building and the area northwest of the immigrant building. The presence in the latter area of a concrete flagstaff base inscribed "United States Coast Guard Oct 1940" suggests that it was an outdoors assembly area, although when the guardsmen received it they evidently intended to lay out a softball diamond, tennis courts, and a boxing ring. "By December 1942, the Coast Guard had been granted space in other buildings on Ellis Island. One section of the covered way was set aside for a ...

rifle range ... and one wing of the ferry building was designated for training purposes." The recreation shelter northeast of the powerhouse was altered for use as a "brig." (Unrau 1984:822-827.)

The administration of Ellis Island, along with the rest of the Immigration and Naturalization Service, was transferred from the Labor to the Justice Department in June, 1940, largely because the immigrant had come "to be considered in the aspect of his potential threat to national security" (Unrau 1984:828-829). Due to the war, immigration through the Port of New York fell from 62,035 in 1939, and 48,408 in 1940, to 1,089 in 1943, and 1,075 in 1944. But activity at Ellis Island increased. When the U.S. entered the war, the station assumed the task of detaining enemy aliens, and the average number of detainees held on the island daily rose from 236 in 1940 to more than 800 in 1943-44. The detention of non-enemy aliens, however, accounts for some of this increase. The war made it increasingly difficult, and in many cases impossible, to deport the undesirable aliens frequently held for some time on the island (Unrau 1984:833-839).

The detainees' exercise yard northeast of the main building during this period was described as:

> bleak and treeless . . . a pretty dreary place. It is fenced on the two sides that lie open to the bay . . . . The other two sides are shut in by the red brick walls of the administration building. The corral thus enclosed is a large rectangle of made land, as flat as a floor, with a dust-gray surface and not a spot of green anywhere . . . .
>
> [New York Times Magazine, January 25, 1942]

The arrangement of fences was evidently altered during the war, probably to segregate different categories of detainees. A plan of the island drawn in 1937, with revisions dating to 1942 and 1946 (and no further indication of when, after 1937, the fencing was modified), shows a fence running directly east-west between the main building and the east corner of the island and additional fences (and yards) southeast of the main building (figure 22). This revised plan also shows a guard tower along the seawall near the east corner of the B and D building.

The Public Health Service hospital on Islands 2 and 3 provided medical services to returning soldiers and seamen during the war, as it had under Army administration during W.W. I (Unrau 1984:840).

The final decade of the Ellis Island immigration station's existence had already begun when World War II concluded, but the population of detainees on the island did not rapidly decline following the war. More than 150 Germans were still detained as enemy aliens during 1948, although nearly all were released or deported by 1949. At the same time, immigration returned to the levels of the 1920s, and with this surge came many who were held for additional investigation. Aliens facing deportation also continued to be held on the island (Unrau 1984:966-970). As the numbers of detainees finally began to dwindle during the late 1940s, it was increasingly recognized that the detention facility which Ellis Island had become was too expensive to operate and maintain.

The Coast Guard, meanwhile, closed its training station in 1946, keeping only a radio room in operation in the immigrant building. The remainder of that building was taken over by the Public Health Service, and other space reverted to the detention facility.

Passage of the Internal Security Act in 1950 initiated one last brief period during which large numbers of people were detained on the

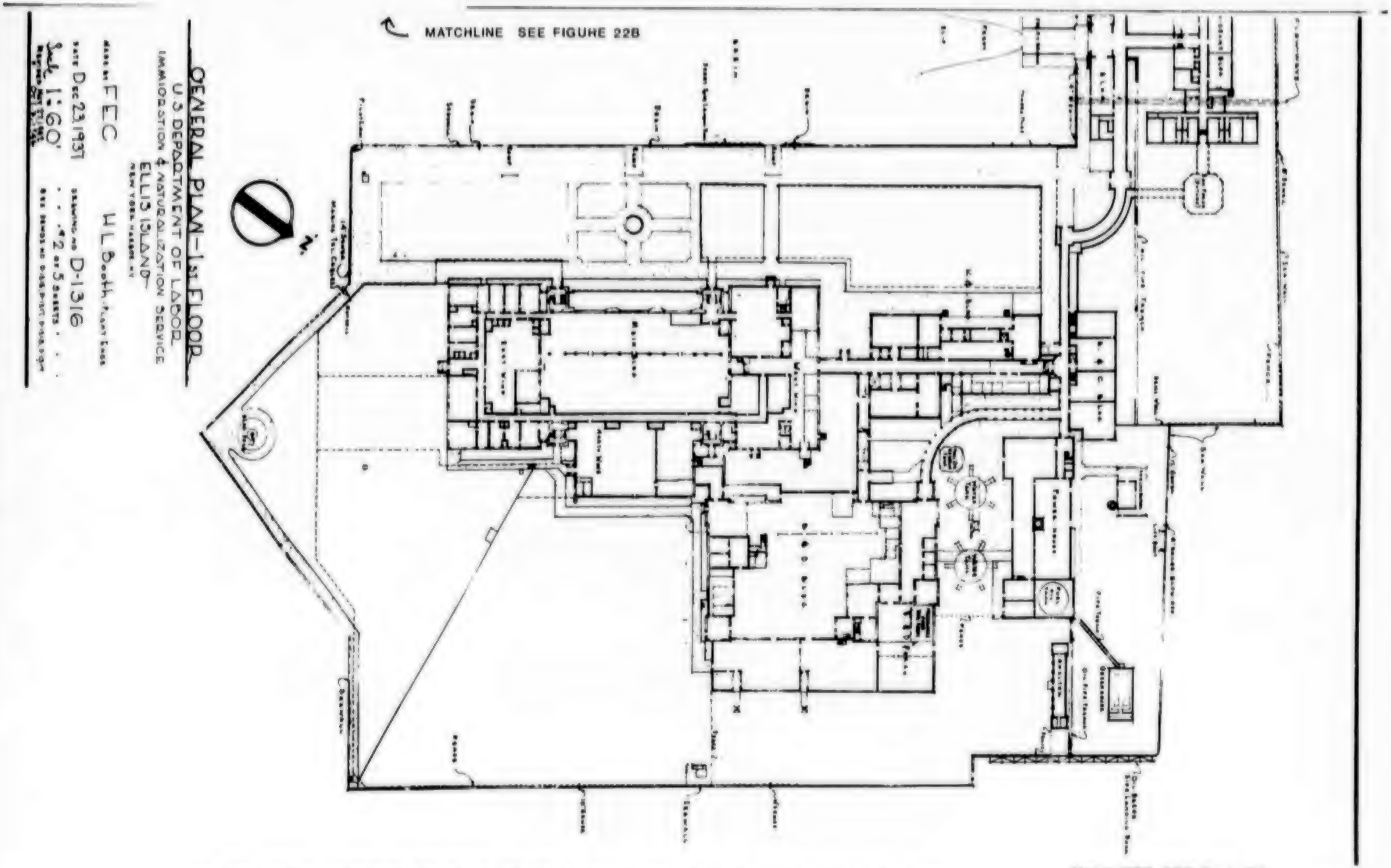
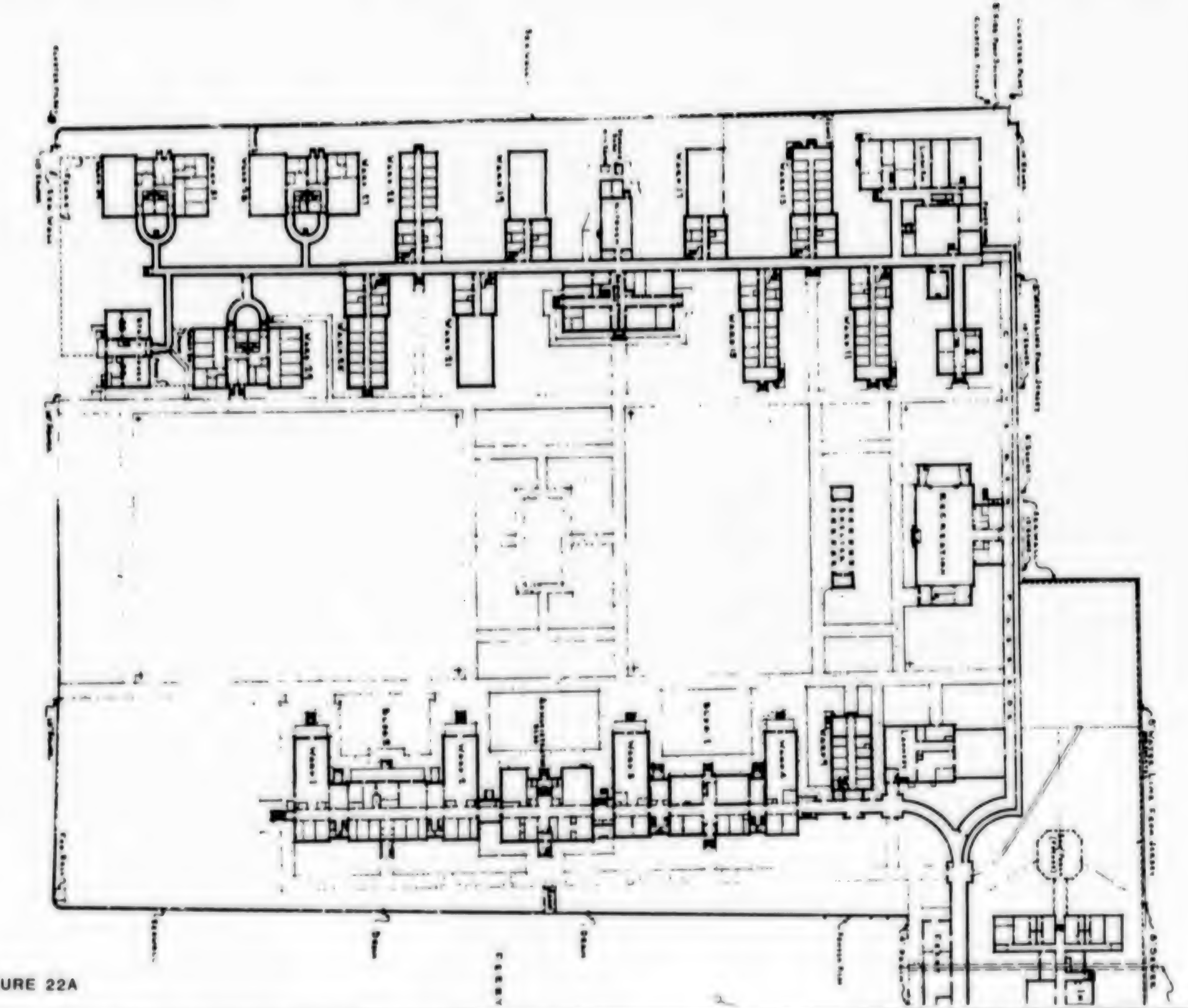


FIGURE 22A. 1937 PLAN OF ELLIS ISLAND -- ISLAND1 (revised in 1942 & 1946)

(from NPS-DSC Dwg. No. 356/43.968:19 / not to scale)



MATCHLINE SEE FIGURE 22A

FIGURE 22B. 1937 PLAN OF ELLIS ISLAND -- ISLANDS 2 & 3 (revised in 1942 & 1946)

(from NPS-DSC Dwg. No. 356/43.968:19 / not to scale)

island. The act prohibited anyone who had been a member of a totalitarian organization from entering the U.S. Many who had received passports and visas prior to passage of the act were detained upon their arrival in the U.S. for further investigation of their pasts, and the number of detainees on Ellis Island quickly rose from 400 to 1,200. During 1951, clarifying legislation was enacted which allowed the entry of people whose membership in totalitarian organizations had been nominal or necessary for their livelihood. At the same time, however, immigration officials in the New York area began a campaign of wholesale arrest and detention of aliens suspected of residing illegally in the U.S., and the number of detainees remained high (Unrau 1984:973-975).

The decision of the Public Health Service to close the hospital on Islands 2 and 3 in 1951 compounded the difficulty of handling large numbers of detained aliens. Although an infirmary was maintained on the island, and enlarged in 1952, some medical services required aliens to be transported to other facilities. The Coast Guard returned to Ellis Island at this time, establishing its Port Security Unit in the former hospital buildings on Island 2. The buildings on Island 3 were at least in part used for storage of files (Unrau 1984:979).

A variety of physical improvements were made to the facilities on Ellis Island during the late 1940s and early 1950s, mostly to the interior of buildings and in part with the assistance of detainee labor. Exterior to the buildings, further changes were made in the fencing around the exercise yards and additional guard towers were built (figure 23). During 1952, as part of a new fire protection plan, a new system of water mains and fire hydrants was installed, along with a system of interior sprinklers and a large reserve fuel oil tank, located northeast of the powerhouse.

A description of rubbish disposal procedures which have significant archeological implications accompanied a 1951 proposal for improvements on Ellis Island:

> All disposable materials are brought to the area at the northeast corner of Island Number 1.
>
> Metals are placed in one location for sale on bids, in the usual manner, when sufficient metal has accumulated.
>
> Wood, paper, and garbage is burned in the incinerators.
>
> Cans are crushed into 14-inch cubes.
>
> Masonry rubbish, ashes from the incinerators, and coal ranges and crushed cans, are deposited in a hold which when empty measures about 35 feet square and 6 feet deep.
>
> When the rubbish hole, which is protected by a low wooden fence, is filled and rubbish has been pushed to a height of 6 feet, bids are taken for removal of the accumulation, usually about 500 cubic yards. The rubbish hole is located in such a position that the material can be loaded by a derrick-boat with a clam shell bucket into a dump bottom barge. Since the material is dumped at sea, no material which will float can be included. Crushed cans in bales are disposed of with the other rubbish for the reason that they have no commercial value as metal scrap, and it would otherwise be necessary to pay for their removal from the island.
>
> A barge-load of rubbish, about 500 yards, accumulates about once a year, and the cost of removal is $1,000 or slightly under.
>
> [Unrau 1984:989-990]

The capacity given for the rubbish hole is consistent with the size (about 24 feet by 48 feet) of a "debris box" located along the seawall directly northeast of the greenhouse on plans of the island drawn in 1952 (Figure 23). A small auxiliary incinerator, located

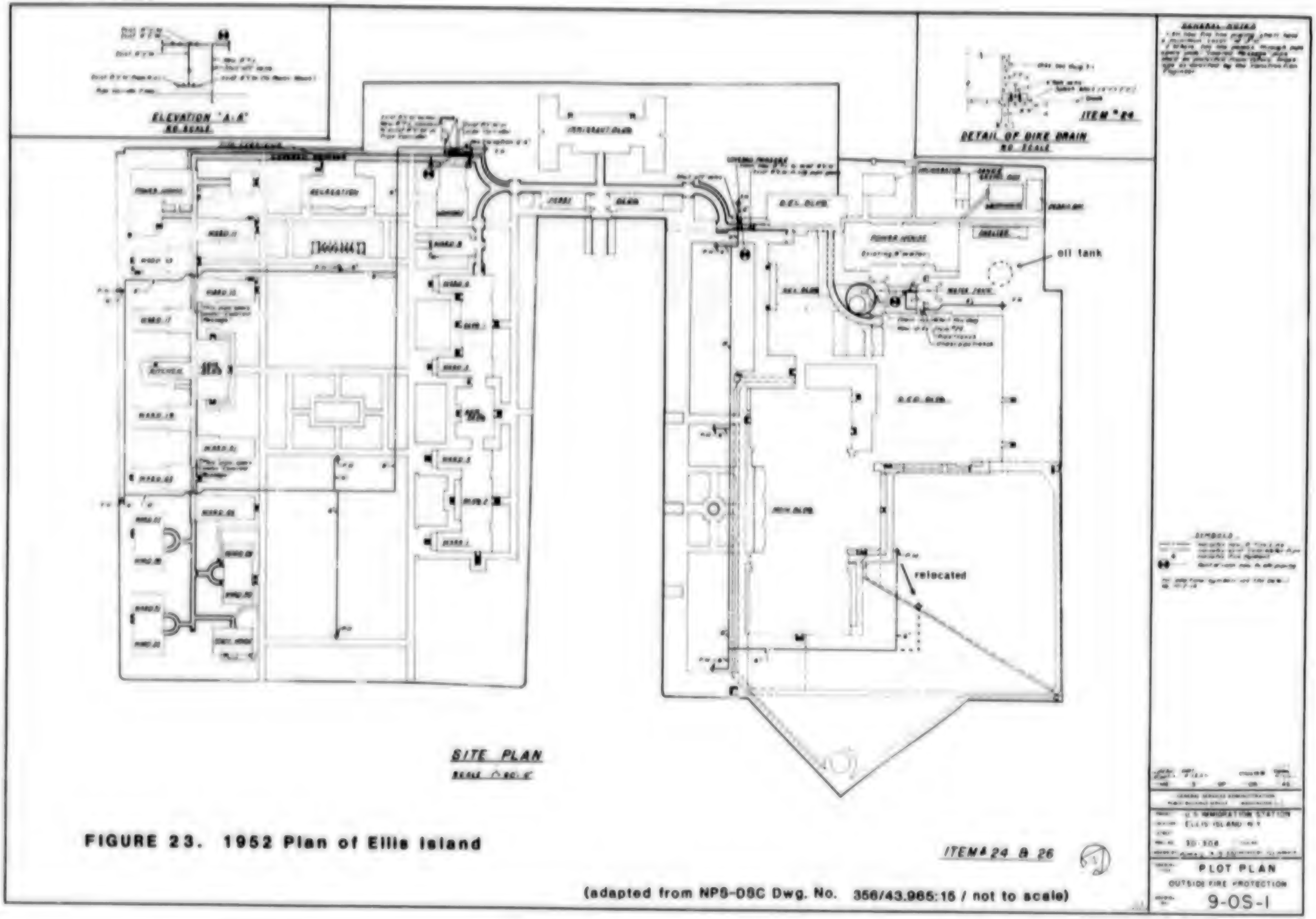


FIGURE 23. 1952 Plan of Ellis Island

(adapted from NPS-DSC Dwg. No. 356/43,965:15 / not to scale) northwest of the main incinerator on Island 1, was evidently constructed sometime between 1946 and 1952.

The number of detainees on Ellis Island had decreased by 1953-54 to a level comparable with that of the 1930s. Serious consideration was again given to closing the detention facility, and the decision to do so was at last made. The Coast Guard also departed the island either before or at the same time as the immigration service.

> During September and October [of 1954] a force of laborers carried out a "general clean-up throughout the premises" on Ellis Island. The Immigration and Naturalization Service also commenced operations to dispose of property on the island. The agencies given top priority in this regard were border patrol offices, the Bureau of Prisons, and other federal agencies such as the Army, Navy, and Public Health Service through the General Services Administration. It was agreed that thirty inmates and seven officers of the Bureau of Prisons would start moving equipment from Ellis Island on October 25. Among the items they would move would be laundry equipment, refrigerators, water coolers, kitchen equipment, furniture, fire hoses, and extinguishers, plumbing, carpentry, and janitorial supplies, lockers, lumber, glass, paint, pipe, iron, steel, conduits, fittings, wire cable, linoleum, groceries, silverware, dishes, clothing, bedding, and athletic equipment. The Border Patrol Training School at El Paso, Texas, also sent a truck to transport supplies from Ellis Island to its facility.
>
> Immigration officials filed an official "Report of Excess Real Property" on October 15. According to the report there were 35 detention station buildings on Ellis Island with a floor area of 513,013 square feet; 6,435 lineal feet of masonry sea walls; a water system having two miles of main and two 250,000-gallon overhead tanks; 640 lineal feet of sewage lines; three incinerators; one 130,000-gallon tank and one 75,000-gallon tank for fuel oil storage; 6,000 lineal feet of electric main feeders; 88,000 square feet of cement sidewalks; and 7,000 lineal feet of 10-foot-high chain link fencing.
>
> [Unrau 1984:1002-1003]

Unrau notes that during this operation "an extensive building-by-building inventory was taken of all kitchenware, furniture, electrical power, refrigeration, and maintenance equipment, laundry supplies and lumber on the island (1984:1003n).

At the same time, the problem of detaining large numbers of aliens was to a great extent obviated by the adoption of new procedures. After November of 1954 "only those regarded as likely to abscond, or who might be risks to national security or public safety," were to be detained (Unrau 1984:1004). On November 12 the last of the detainees were transferred from Ellis Island to other federal facilities, and on November 29 the ferry boat *Ellis Island* made her last run. After 50 years of service connecting the island with New York, she was moored at her slip on the island, where 14 years later she would sink and where her remnants still rest (Unrau 1984:1008).

Ellis Island was officially declared to be "surplus to the needs of the federal government" by the General Services Administration (GSA) on March 15, 1955. No federal agency was at that time willing or able to take on the financial burden which the aging buildings on the island entailed. Nor did subsequent attempts by GSA to find appropriate public or private users succeed. Finally, on May 11, 1965, by presidential proclamation, Ellis Island was made part of the Statue of Liberty National Monument, and as such part of the National Park System (Unrau 1984:1145-1165).

Between 1954 and 1975, when adequate funding for security, maintenance, and selective rehabilitation began to be provided, the buildings and grounds of Ellis Island suffered extensively from the ravages of nature and man. These ravages are documented in Unrau's HRS

(1984:1170-1186), by the descriptions and photographs of the existing condition of the buildings and grounds in the architectural HSRs (Building Conservation Technology/The Ehrenkrantz Group 1980; Beyer Blinder Belle/Anderson Notter Finegold 1984), and by Wilton Tifft's photographs (1971).

A number of projects carried out on Ellis Island since 1975 are noteworthy from an archeological standpoint. A general cleanup of parts of the buildings and grounds done to open the island for visitation in 1976 involved removal of 40,000 bags of debris (Unrau 1984:1189-1190). While most of the material removed was undoubtedly insignificant and presumably redundant relative to what remains, its removal nonetheless altered the archeological characteristics of the island.

A septic tank and leach field were constructed below grade northeast of the immigrant building, also in order to open the island for visitation. (Historically, raw sewage had been discharged into the surrounding harbor.) The ground disturbances associated with construction of these facilities would have disrupted the context of artifacts in the area.

Rehabilitation of the seawall surrounding Ellis Island, which had developed numerous cracks and in some locations had collapsed, began in 1976 and is continuing (Beyer Blinder Belle/Anderson Notter Finegold 1984:94). Because it has been necessary to reset at least the upper courses of the seawall, soils (and the artifacts they may contain) and features immediately behind the wall have been disturbed. Erosion, however, was already causing similar disturbances, and without rehabilitation of the seawall would have caused more.

Except for the area occupied by the sunken Ellis Island, the ferry basin was dredged in 1976. This project, however, is unlikely to have had any effect on significant archeological resources (Kardas and Larrabee 1976). Dredging of the basin was done routinely during the first half of the twentieth century.

Broadly conceived, the archeology of Ellis Island has benefited from a project to inventory and to conserve in some degree the artifacts remaining in the buildings on the island. This project was begun in 1983 by Flora Kaplan of New York University.

THE ARCHEOLOGICAL POTENTIAL OF ELLIS ISLAND

Contexts of Archeological Resources

Ellis Island, as it now exists, is largely the product of its historical development, especially the last century of development. Therefore, a brief discussion of the soils composing the island, viewed as the contexts of artifacts and features, should precede detailed consideration of the probable archeological resources themselves. This discussion focuses on the historical origins of the soils, the extent of disturbances to them, and their potential integrity as archeological contexts, rather than their physical characteristics. Changes to the grade of the island are also discussed.

The natural island which lies at the core of island 1 "was a tiny bank of mud and sand, mixed with oyster shells, about three acres in extent, and scarcely rising above the water at high tide" (Pitkin 1975:1). During the prehistoric period, and for the initial 150 years of the historic period, the surface of this "mudbank" was the receptacle of discarded objects and materials, and the base for built and excavated features, which together constituted the archeological reflection of activities occurring on the island during those periods. (As noted above, however, during much of the prehistoric period Ellis Island is likely to have been a low hill at the shore of the Hudson River.) Disturbances to the island's surface would have been minor. Except for the possible introduction of masonry footings below the surface in the mid-eighteenth century, ground disturbances would mostly be reflected by small scale soil disconformities and inclusions of culturally derived or altered materials. During the progressive submergence of formerly dry areas surrounding Ellis Island, some soils, together with the archeological resources they contained, are likely to have been disrupted by waves and tidal flows. Others, however, may have been covered by sediment.

Portions of the early surface of Ellis Island may have remained at grade up to the end of the nineteenth century, but substantial modification of the island apparently began toward the end of the eighteenth century, when fortifications were initially constructed. A c. 1800 plan (figure 3) shows an inlet-like area roughly 80 feet in diameter at the northeast side of the island. This area, which does not appear on earlier or later plans, may have been excavated to provide fill for use elsewhere on the island. A jetty was constructed, presumably by filling, about the same time at the southwest side of the island. More detailed drawings made somewhat later (1813, figure 4) show that the island's southeast end, where the fortifications were located, was higher than other areas, probably through use of fill. If that end of the island was naturally more elevated, it would presumably have been selected as the site of earlier structures. It is possible, however, that the 1813 elevations for the southwest end of the island are somewhat exaggerated.

In any case, between 1794 and 1813 a section of the original ground of Ellis Island is likely to have been excavated and used locally as fill. At the same time, a section of the original surface at the southeast end of the island was probably buried, and thus separated stratigraphically from subsequent developments on the island. The constructior during this period (1794-1812) of buildings, of walls on and around the island, of wells, and, presumably, of privy pits would also have resulted both in ground disturbances and in the placement below the island's surface of various artifacts and features. Aside from the modifications of grade at the island's northeast side (by excavations, followed by filling) and southeast end (by filling), its elevation was probably what it had been originally, evidently ranging up to about 5.0 feet A.M.S.L.

Because much of the former surface remained at grade, and because ground disturbances would generally have involved minor displacement of surface soils, most contexts containing archeological resources from this period would be likely also to contain resources from previous and subsequent periods. A few contexts, however, may have been distinctly set apart due to both the use of fill and the deliberate or accidental creation and use of debris "traps." For example, the excavation of the inlet-like area along the northeast side of the island is likely to have resulted in exposure of a sterile, albeit submerged, surface, which may subsequently have served as a convenient dump.

The remainder of the period during which the military controlled Ellis Island -- all but the last decade of the nineteenth century -- witnessed further episodes of development which would have had effects on soils substantially the same as those already described. Some additional contexts deriving from earlier periods would have been effectively sealed from on-going ground disturbances and artifact deposition, but others would certainly have been disrupted.

The remaking of Ellis Island, through filling, into an artificial platform began with the development of the first immigration station. Soil from the dredging of a ferry basin at the island and of a navigable channel to it was probably used (along with material from the island itself) as fill during 1890 and 1891 when the island was enlarged to more than 6.5 acres. The fill soil, as will be discussed below, consisted primarily of clayey sand and gravel, and of "mud." The newly filled area, located mostly along all but the eastern and northeastern edges of the island, evidently had elevations of about 2 to 3 feet above high water, the same as low areas of the original island.

Although several of the existing military structures on the island were adapted for use by the immigration station, the modifications to them, as well as new construction, would have necessitated disturbances of previously established ground surfaces. The more significant of these ground disturbing construction activities have been noted above, in the historical background section of this report. Some evidence, discussed below, suggests that grade in the area of Fort Gibson, the highest part of the island, was reduced by about 1.0-1.5 feet. Material from demolition of the parapet, gun platform, and walls of the fort was probably included with the fill at the margins of the island, as presumably were soils displaced due either to grading or to new structures.

Again, the ongoing development of Ellis Island would have affected the integrity of many prior archeological contexts. This appears to have occurred especially in the area of the fort, where demolition of structures was combined with construction of new buildings and with modification of old buildings and of grade. Nevertheless, previously buried contexts in that area, including some of the island's original surface, are likely to have been less affected than nineteenth century surface contexts. Archeological contexts were less extensively affected by construction in other parts of the island, although contexts were presumably destroyed in locations such as those of the large cistern and of underground utilities. Other contexts, particularly in locations where grade was formerly very low, may have been buried. Where fill was deposited at the margins of the original island, shoreline and submerged archeological contexts would have been buried. Dredging and the construction of bulkheads is likely to have destroyed other submerged contexts. Between 1894 and 1896 Ellis Island was again enlarged. Fill was used along the east and northeast margins of the island, adding about 2.5 acres to it. Evidently, cinders were used extensively in filling this area, along with clayey sand and possibly loam. The grade established in this area probably ranged from 2.5 to 4.0 feet above high water. Some of the cinder fill may derive from the coal fired power and steam heat plant on the island.

The masses of fill used to triple the size of Ellis Island (from 3 to 9 acres) between 1890 and 1896 undoubtedly contain artifacts, but for the most part these masses cannot be regarded as important archeological contexts. The artifacts they contain, as discussed below, may individually have significance, but their exact contextual provenience would contribute little, if anything, to interpretation, other than regarding dates of filling episodes. The content of the surfaces of these bodies of fill, however, and disturbances to them, may in some instances reflect the activities and structures of the first immigration station.

The 1897 surfaces of Ellis Island, where they have survived subsequent development, will in most areas be marked by material from the fire which destroyed the station -- charcoal, melted glass, shattered roofing slate, heavily corroded iron hardware, and fire-altered masonry. Surfaces in the vicinity of the buildings (and below the boardwalks) which survived the fire are likely to be less distinctly marked. Debris removal following the fire may have blurred the characteristics of the 1897 surfaces, but probably did not alter them substantially. Many artifacts, however, were presumably removed as debris.

The creation of the second immigration station necessitated a more thorough remaking of the island than any previous use. Ellis Island, already three times its original size, would be tripled in size again before its extant outline was arrived at. In addition, the grade of Island 1 -- the pre-1897 area -- would be raised by roughly 2 feet.

Alfred B. Fry, the chief engineer and the superintendent of repairs for U.S. public buildings in New York, provided the most detailed contemporaneous description of the process of enlarging the island by means of fill. Fry noted that Islands 2 (c. 1898) and 3 (c. 1905) were filled in the same manner and that the fill was to "consist of earth and stone -- no soft mud, garbage, ashes, or other matter unsuited to give solid body" was to be used (Unrau 1981:505-506). After Island 3 was completed, Fry wrote the supervising architect that:

> The method of filling in behind the timber crib of the new island was by the depositing of hard material, cellar dirt, stones, clay, old masonry, etc., using long-boomed orange-peel dredges picking up material deposited by dump scows. There has also been used for topping off a portion of

> the island a very excellent grade of sand obtained by dredging in the vicinity of said island; such sand however not being used for the lower potions of fill, it being likely to run when wet.
>
> (Unrau 1981:513)

Inherent in the method of filling described above is the likelihood that artifacts from locations which it would be impractical if not impossible to determine have been deposited on Ellis Island along with the fill soils. These soils, like earlier fill soils, would be of questionable significance as archeological contexts. The subsurface fill used in raising the grade of Island 1 probably derives from construction related excavations on the island itself, and the artifacts within it could reflect all of the island's cultural past. These artifacts would, of course, be mixed together, and their exact provenience would tend to lack significance. Masonry from the walls of buildings destroyed by the 1897 fire most likely would have been incorporated with the fill on Island 1.

The soil at the surface of most of Islands 1 and 2 was deposited in 1903 when these islands were landscaped. The specifications for the approximately 70,000 cubic yards of loam to be used as top-dressing at that time clearly called for it to be free of debris (National Archives, Record Group 85, Box 146, Item No. 34,251), but nonetheless it may have contained some small artifacts of exogenous origin. Similar soil was probably used in 1908 to top-dress the northeast side of Island 3. Some of the subsoil there derives from excavations for an addition to the hospital on Island 2. The southwest side of Island 3 was evidently not graded, top-dressed, or seeded prior to the mid-1930s (Unrau 1981:529; NPS-DSC Dwg. Nos. 356/43.968:8 and 9). Existing elevations in the vicinity of the buildings on Ellis Island, in the range of 8.0 to 10.0 feet A.M.S.L., were established as an aspect of landscaping.

Ground disturbances would also have occurred in connection with the construction of additional buildings on Islands 1 and 2, and with the modification of existing buildings. Substantial adverse effects on archeological contexts and features were likely confined to the locations, on Island 1, of the railroad ticket office, of the main building's entrance canopy, and of the B and D building.

Fill and topsoil, where needed, would have been used when various sections of the seawall were built to replace the former bulkheads, and ground disturbances would have accompanied seawall construction at the margin of previously filled areas. Grade at the edges of the island was probably somewhat less than its present level of approximately 7.0-8.0 feet A.M.S.L. prior to construction of the seawall. Further enlargement of the island occurred along with construction of the seawall. The former basin between Islands 2 and 3 was filled at least in part during the 1920s, as was a smaller area north and northeast of the B and D building. Although dredged soils may have been used in these areas, the surface fill was predominately cinders.

The last enlargement of Ellis Island occurred during the mid-1930s. After being filled, these areas -- northwest of the ferry basin and at the east corner of Island 1 -- were graded and top-dressed. At the same time, the area between Islands 2 and 3 was graded; up to 2 feet of cinder fill was removed and replaced with subsoil and topsoil (Unrau 1981:491). Areas at the southwest side of Island 3 and northeast of the B and D building on Island 1 were probably graded and top-dressed about the same time, although it has been suggested that the latter area was not top-dressed (Beyer Blinder Belle/Anderson Notter Finegold 1984:98). The 1939 planting plan for the island (NPS-DSC Dwg No. 356/43.968A) called for seeding at the southwest side of Island 3, in the area between Islands 2 and 3, at the former site of the Red Cross building, and in the areas newly filled during the mid-1930s. All these areas must have been top-dressed before being seeded. Previous observations regarding the relative lack of importance, as archeological contexts, of bodies of fill pertain also to the newly filled areas. Similarly, as before, it may be assumed the soil used for top-dressing was generally free of exogenous artifacts, so that its content for the most part may constitute an archeological reflection of post-depositional human activities on the island.

Sporadic ground disturbances, occasionally having adverse effects on archeological contexts and resources, continued until the second immigration station closed in 1954, and have occurred in recent years as well, under NPS administration of the island. The sites, on Island 2, of the Red Cross building and the Surgeon's House (Nurses' Cottage) would have been disrupted during demolition of these buildings in the mid-1930s, but prior to this the areas are unlikely to have possessed important archeological contexts, so the effects there were presumably not adverse. Archeological contexts where the main building's entrance canopy was located were presumably less affected by its demolition than by its construction. Other minor ground disturbances, with minimal effects on archeological contexts, would have resulted from walkway modifications and repairs, from the erection of fences and guard towers, and from the planting (and removal) of shrubs and trees.

More extensive disturbances, with potentially adverse effects on archeological contexts and resources, were entailed by the construction of large water tanks in 1920 and 1929, and by the installation of new water mains and the erection of a large reserve fuel oil tank in 1952. More recent ground disturbances, with potentially adverse effects, have occurred adjacent to most of the island's seawall and at the site, northeast of the immigrant building, of a modern septic tank and leach field. Along recently reconstructed portions of the seawall it appears that dredged soil and other materials (rubble, gravel, and sand) have been used to compensate for soils lost due to erosion or construction. The archeological integrity of soils formerly at the surface of the septic tank/leach field location has been adversely affected due to their likely mixture with dredged fill soils in that area.

It may be anticipated that the Ellis Island restoration project currently under way will involve more ground disturbances, some having adverse effects on archeological contexts and resources. These disturbances will be documented, and adverse effects on significant resources will be mitigated.

In sum, about 90 percent of Ellis Island is filled land. The fill soils, which have diverse origins, mostly lack integrity as contexts of archeological resources and hence tend not to have significance. Nonetheless, many extant and buried surfaces over and beneath these bodies of fill (some consisting of loam likely to be generally devoid of exogenous artifacts) may have integrity as archeological contexts, and they potentially contain resources which would accurately reflect past human activities on the island. Similarly, disturbances to fill and surfaces, although perhaps disruptive of prior contextual integrity, may in many instances provide a reflection of the activities and structures associated with the disturbances. Remnants of the original, prehistoric and early historic surface of Ellis Island are likely to be among the contexts covered by fill, and by structures. Although it is likely that these remnants are disrupted and, as contexts of archeological resources, not fully intact, their possible significance cannot be dismissed.

The existing surface of all of Ellis Island has the greatest degree of integrity, and the potential of archeologically reflecting twentieth century activities. The probable content of this surface is discussed below. Potentially significant archeological contexts below the island's existing surface are for the most part confined to Island 1, particularly to areas beneath the main building and the K and L building and extending approximately 100 feet northeast and southwest of these buildings.

Characteristics of Potential Resources

The largely historical origin of Ellis Island as a land mass, and the associated process of creation and disruption of archeological contexts, has been discussed in the preceding section. The various kinds of archeological resources which are likely to be located in those contexts are discussed in this section.

Prehistoric resources, despite historical disruption, are likely to be present beneath the existing surface of Ellis Island. They may be located in original contexts where remnants of the island's prehistoric surface have survived and in some formerly submerged areas now covered by fill. They are also likely to be located, out of their original context, within bodies of fill on the island, particularly on

Island 1 where locally excavated soils would have been used most extensively. Large, contextually coherent assemblages may no longer exist on the island because of its historical development. It is possible, however, that some artifacts are associated with intact features such as hearths or pits which could supply a basis for exact dating and for interpretations regarding the seasonality of use of the island and the diet of the users.

The Paleo-indian period (c. 10,000-8,000 B.C.) may be represented on Ellis Island by characteristically fluted Clovis projectile points or point fragments such as have been found at the Port Mobil site on Staten Island, or by the somewhat more recent Plano-like points such as found elsewhere in New York and New Jersey. Such specific evidence for early big game hunters is, however, rare, and these peoples' presence may only be reflected by various more common, though less diagnostic, stone tools (e.g., unifacially flaked scrapers, knives, and gravers). Paleo-indian artifacts are only very rarely located in association with hearths and other features, even at undisturbed sites, so this situation is most unlikely to exist on Ellis Island.

The Archaic period (c. 8,000-1,000 B.C.) is more likely to be represented by projectile points and other tools characteristic of recognized prehistoric cultural traditions. Points of the Kirk and Bifurcate-base tradition, together with biface knives, drills, uniface scrapers, and possibly roughly flaked "choppers," may have been deposited early in the period. Representing the middle Archaic, there may be occurrences of Stanley Stemmed points, ground stone celts, pecked or notched net sinkers, and bone fishhooks, as well as other tools. From late in the period there may be Narrow Point tradition artifacts, such as Poplar Island and Bare Island points, and possibly bannerstones, together with knives, scrapers, net sinkers, and other stone and bone tools. There may be evidence for the increasing exploitation of shellfish from the middle of the period on. There may also be hearths and concentrations of fire-shattered rock. (Ritchie 1980:145-149; Funk 1978:19-27.)

The transition to the Woodland Period would probably be marked by Susquehanna tradition points (such as the Snook Kill type), by steatite bowl fragments, and perhaps by Orient fish tail points, but the period itself (c. 1,000 B.C.-A.D. 1,600) is generally defined as beginning with the introduction of pottery, which occurs locally during the North Beach phase of the Windsor tradition (Smith 1982). Due to the submergence of the flats west of Ellis Island, and the consequent decrease in accessibility of fresh water, episodes of island use by local populations of the Middle Woodland Windsor tradition, Clearview phase, and the Late Woodland East River tradition were probably of lesser duration. These episodes, however, may have had greater intensity and have been more frequent. Various types of stemmed, notched, and triangular points are associated with the pottery of these traditions, but activities here are probably focused by this period on fishing and shell fishing. Implements related to these activities, such as fishhooks, harpoon points, and netsinkers, are likely to be more prevalent. Pits, which were presumably used initially for roasting and were subsequently filled with debris, are also common at Windsor and East River tradition sites, and may be expected to occur on Ellis Island. European trade goods have been found at other sites with artifacts of the East River tradition, Clasons Point phase, which indicates that with this archeological culture, identified with the historic Munsee, the prehistory of the area came to an end.

Early historic archeological resources on Ellis Island, like the prehistoric, can be expected to exist within the buried remnants of the island's original surface, and in fill contexts deriving from the original island. Due to soil disturbances and the probable mixed deposition of artifacts, it may be difficult to distinguish among some contexts reflecting use of the island by early colonists, and others reflecting use by Indians possessing European trade goods.

Subsistence fishing and shellfish gathering undoubtedly continued during the early historic period, along with the creation of such features as hearths and pits. Iron tools and tool fragments, such as knives, shovels, tongs, and fishhooks, together with hardware, would likely predominate among the artifacts deposited at this time, since the maintenance of oystering and fishing equipment (and the discard of worn-out items) would have been a major activity. There may also be fragments of metal cooking pots, ceramics, bottles, drinking vessels, and clay pipes, deriving in part from the "feasting" reported to have occurred regularly on the island. Buttons and buckles, lost from clothing, and even small denomination coins, reflecting occasional commercial transactions, could have been deposited at this time.

Proprietary commercialization of activities took place by the mid-eighteenth century, if not earlier, and was accompanied by construction of buildings for the storage of equipment and the refreshment of people engaged in work (or recreation) on the island and in its vicinity. These buildings, if not completely of brick, may have had masonry foundations and fireplaces, and remnants of these may have survived below the existing surface of the island. Any earlier historic or prehistoric structures would likely have been of temporary, post-in-ground construction; the extensive disturbances to the island's surface might make interpretation of any surviving archeological reflection of such structures most difficult.

Intensified use of the island presumably motivated the apparent mid-eighteenth century assertion of proprietary rights. The ensuing operation of a tavern, rental and maintenance of equipment, and, possibly, the buying of catches would have been accompanied by deposition of increased amount of bottles, drinking glasses, ceramics, smoking pipes, tools, hardware, and coins. The diversity among artifacts also may have increased.

Artifacts of the period, including objects such as nails, bricks, and possibly window glass, tile, and fireplace furniture, deriving from demolition of the buildings, would presumably be concentrated in remnants of the area, toward the northwest end of the original island, where the buildings were located. (This area is presently beneath and northeast of the K and L building.) These artifacts might also be found in fill contexts anywhere on Island 1.

The period of overlap between commercial and military activities on Ellis Island (1794-1808) may have resulted in the mixture, upon deposition, of some artifacts deriving from otherwise distinct and separate sources. In addition, it is likely that the commercial facilities, especially the tavern, provided services to people involved in the construction of the fortifications, and to military personnel. When the military gained control of the entire island, the former commercial facilities were adapted for military use. All of this may have distorted, or at least complicated, the archeological reflection of both the final commercial and the initial military activities on the island. Nonetheless, the fortifications were the basis for the military presence on the island, and specifically military artifacts (i.e., deriving from munitions and uniforms) are probably concentrated towards the southeast end of the island, where the fortifications were located. Former surface and buried contexts in this area, now beneath and northeast of the central and southeast sections of the main building on Island 1, are consequently those most likely to contain military artifacts from this period. Structural features deriving from the fortifications would be located in the same areas. Fill contexts on Island 1 would also contain both artifacts and materials from buildings of the period. It is noteworthy, however, that buildings at the island's northwest end, some having earlier commercial origins, were demolished between 1813 and 1819, and that several buildings associated with the fortifications at its southeast end remained in use into the 1890-1897 period. In addition to artifacts associated with military tasks and equipment, there are likely to be various objects deriving from culinary, construction, and other activities which reflect more common aspects of the period's and the region's material culture.

Evidently, the War of 1812 was the only period during which the fortifications on Ellis Island were fully garrisoned. Prisoners of war were also housed on the island then. Before and after the war the fort served primarily as a recruiting depot, while between c. 1835 and 1890 the island's main function was that of a naval magazine, at which a small guard was posted. It is likely therefore that a major part of the artifacts from the period of military control of Ellis Island will date to the War of 1812. Throughout the period, however, there were numerous construction episodes which are likely to be reflected archeologically by both features and artifacts. In particular, the development of the naval magazine probably involved extensive use of cuprous hardware, and some iron hardware previously used is likely to have been removed and discarded. The later adaptation and eventual destruction and demolition of the buildings of the naval magazine presumably resulted in the archeological deposition of much of this cuprous hardware, especially nails.

Establishment of an immigration station on Ellis Island during 1890 and 1891 involved extensive structural alteration and new construction, and large amounts of construction related objects and materials were likely deposited at that time both over much of the surface of the island, which was more than doubled in size, and in various fill contexts. As much by their scarcity or absence in some areas as by their frequency in others, the artifacts deposited following the station's opening in 1892 would generally reflect institutional routines governing the movement of immigrants through the facilities and the collection and disposal of debris.

For the most part, debris from the operation of the first station would have been disposed of away from the island, although some of it might have been dumped in adjacent areas of the harbor, or possibly incinerated and deposited locally in fill contexts along with cinders. Institutional artifacts deriving from the feeding and lodging of immigrants, medical treatment, clerical routines, and building maintenance would have predominated among the objects discarded. It is possible that the vicinity of the former powerhouse was then, as it evidently was later, an area where debris was collected prior to its disposal away from the island or its incineration. If so, artifacts of the period may be more frequent in that area. (The area, much disturbed, is now the site of the existing powerhouse and is overlapped by the northwest edge of the B and D building.) Artifacts and ethnofaunal material deriving from culinary activities may be present in the vicinity of the former hospital kitchen, immediately southeast of the B and D building. Except for building foundations and, possibly, previously buried contexts, many of the archeological resources in the vicinity of the restaurant kitchen are likely to have been obliterated during construction of the existing main building.

Personal possessions lost or discarded by immigrants during this period are likely to be present on the island, although uncommon. Their greatest frequency may occur near the restaurant (now the vicinity of the main building's east corner) and the disinfecting facilities (initially in the hospital annex, which is now the site of the B and D building, later in the disinfecting house east of the main building). Groups of immigrants are likely to have waited turns near these structures for meals and baths.

As previously noted, one consequence of the 1897 fire which destroyed the first immigration station was deposition of a layer of charred building material laden with artifacts from the structures which burnt and their furnishings. This layer may also contain objects from luggage and clothing of immigrants on the island at the time. Although this context was undoubtedly disrupted and partially destroyed during debris removal following the fire, and during construction of the second station, large portions of it are likely to remain intact.

Construction of the second immigration station, between 1898 and 1902, would again have resulted in deposition of wasted building materials and of construction related artifacts on contemporaneous surfaces of the island and within fill contexts. Some of this material would have been removed after construction was completed, while some would have been buried during landscaping of the island in 1902.

The second station was evidently run much like the first had been, at least initially. The examination of immigrants remained the primary task, and those who passed were generally on the island only briefly. Those detained on the island pending their re-examination, appeal, or return to port-of-origin, and those hospitalized there, were subject to the station's institutional regime for a longer period, usually a few days, sometimes weeks, occasionally months. Examination rooms, detention pens (later called detention rooms), dining halls, dormitories, and sanitary facilities, all but the first of which were frequently overcrowded, were the major, and sometimes the exclusive, locations of detainee activity. The maintenance of surveillance, and of schedules, as well as general housekeeping tasks, would have been as much a part of officials' duties as determining the admissibility of aliens. Opportunities for outdoor recreation -- access to areas and facilities for exercise and play -- came to be provided, although for many in the years prior to World War I such opportunities were confined to rooftops, porches, and paved areas adjacent to buildings. By the 1920s, the grounds northeast and southeast of the main building became the primary recreation areas for detainees. These areas were eventually surrounded by fences, and guard towers were built at their corners.

The artifacts deposited on the island's surface during the second station's existence, and in contexts, some now buried, at its margin, would again reflect the station's institutional purpose and operation. The most widespread kinds of artifacts would probably be those resulting from the maintenance and modification of buildings, while concentrations of artifacts deriving from various institutional activities -- culinary, clerical, medical, etc. -- would likely occur where debris was collected for incineration and disposal away from the island, at the northwest end of Island 1, and possibly of Island 3. Items reflecting the uses of particular buildings -- such as broken tools and hardware in the vicinity of the carpentry shop, or flower pot fragments at the sites of greenhouses -- are likely to be present and in some instances numerous. Objects lost or discarded by immigrants, however, are probably uncommon, and largely confined to the recreation areas. The formally landscaped areas on either side of the ferry basin are those least likely to contain numerous artifacts of any sort.

Demolition of structures such as the surgeon's house on Island 2 converted the footings and foundations of these structures into archeological features. The abandonment and burial of crib-work bulkheads and docks would also have resulted in the creation of features, as would trenching for installation or modification of buried utilities. The locations and other characteristics of archeological features created during and after the existence of the second station are in large part predictable on the basis of existing documentation.

The archeological resources reviewed above make Ellis Island a complex, multi-component, archeological site. The likely prehistoric and early historic human activities are reflected by buried and disturbed contexts at the core of Island 1, while subsequent historical activities, increasingly better documented up to the present time, are reflected by resources in contexts layered over and around, or intrusive within, those which existed earlier. The significance of these resources will be addressed in the conclusion of this report, following a review of what has been discovered previously, and a discussion of the findings of the archeological survey and testing.

Previously Recorded Archeological Data

Archeological data regarding Ellis Island, as discussed below, are provided in an assessment of the effects of dredging the ferry basin (Kardas and Larrabee 1976) and in a report on the monitoring of basement excavations in the main building (Shallenberger and Rothschild 1981). Such data are also contained in certain non-archeological documents. These latter sources of archeological data are discussed first.

There is an abundance of drawings of Ellis Island and of the buildings which have been situated there. Obviously, these drawings indicate what by way of remnants of structures, disturbed contexts, and buried utilities are likely to exist in many areas of the island, and in this regard they have been discussed above. It may be worthwhile, however, to review the data in particular drawings, especially concerning grade, remnants of former structures, and non-structural features.

The 1890 plan of Ellis Island, reproduced above as figure 13, shows grade ranging mostly from about 4.0 feet to 6.0 feet above high water. The gun platform area was evidently about 8.0 feet above high water, and the "parapet," 11.5 feet above high water. Low areas, with elevations of 1.0 to 3.0 feet above high water, were located along the northeast side and at the northwest end of the island. (The 1890 plan also shows an "ash dump" near the later location of the north corner of the second main building.) These elevations (summarized in table 1) are useful for comparison with earlier and later documentation of grade. A plan and a profile made in 1813 (figure 4) indicate elevations ranging generally from 4.0 to 8.0 feet above high water, and elevations for the gun platform and the parapet (prior to its dismantling) of 10.25 and 16.5 feet above high water respectively. An 1819 profile of the battery (figure 6) shows elevations, above low water, of 10.5 feet for the parade of the fort, of 14.0-14.5 feet for the gun platform, and of 20.5 feet for the parapet. (The corresponding elevations above high water are approximately 6.0 feet, 9.5-10.0 feet, and 16.0 feet.) The 1813 elevations of grade in the vicinity of the fortifications may have been somewhat exaggerated.

The elevations established during development of the first immigration station are not entirely clear, due partly to inconsistences in available data. An 1891 drawing (NPS-DSC Dwg. No. 356/43.970:4) indicates that the island's new cribwork bulkhead was designed to rise approximately 4.5 feet above high water, and to have a 1.0 foot high stringer on top of that. The "top of wharf" and the "top of stringer" at the surface of the bulkhead were used as data on other drawings to show elevations (e.g., Dwg. Nos. 356/43.970:22, 41, and 42). Cross-sections of utility tunnels (and of the large set of cisterns) provided on these drawings indicate that the general grade of the island was roughly equivalent to the wharf elevation, about 4.5-5.0 feet above high water. The cross-section of the cisterns indicates

TABLE 1. ELLIS ISLAND - HISTORICAL ELEVATIONS, IN FEET*.

	1813			1819			1890		
Structures/ Locations	AMHW	AMSL n+2.25	AMSL 1929 datum n+1.5	AMLW	AMSL n-2.25	AMSL 1929 datum n-3.0	AMHW	AMSL n+2.25	AMSL 1929 datum n+2.0
Parapet	16.5	18.75	18.0	20.5	18.25	17.5	11.5	13.75	13.5
Gun Platform	10.25	12.5	11.75	14.0- 14.5	11.75- 12.25	11.0- 11.5	7.75- 8.25	10.0- 10.5	9.75- 10.25
Fort's Parade	8.0	10.25	9.5	10.5	8.25	7.5	6.0- 6.5	8.25- 8.75	8.0- 8.5
Center of Island	7.0	9.25	8.5	—	—	—	4.5- 5.0	6.75- 7.25	6.5- 7.0
Northwest End of Island	3.5- 4.0	5.75- 6.25	5.0- 5.5	—	—	—	1.5- 2.5	3.75- 4.75	3.5- 4.5
Powder Mag./ Restaurant #	—	—	—	—	—	—	9.9	12.15	11.9
Powder Mag./ Records #	—	—	—	—	—	—	9.2	11.45	11.2
Shell House II/ Detent. Bldg. #	7.5?	9.75?	9.0?	—	—	—	6.8	9.05	8.8
Shell House I/ Hospital #	—	—	—	—	—	—	6.75	9.0	8.75
Gunners' Qrts./ Surgeon's Hs. #	—	—	—	—	—	—	6.5	8.75	8.5

* In determining elevations relative to mean sea level, 1929 datum, the adjustment made for rising sea level assumes a relatively rapid rate of approximately 0.5 feet of rise per 75 years. If the actual rate was less rapid, the AMSL, 1929 datum, elevations are understated.

first floor elevations

///

that the stringer elevation was approximately 6.0 feet above high water. When the cisterns were encountered during construction of the existing main building, their internal base, 12 feet below the stringer line, was recorded as having an elevation of approximately 4 feet below mean sea level, equivalent to 6 feet below high water.

Drawings of two of the new hospital buildings (Dwg. Nos. 356/43.970:31 & 36, of buildings "B" and "D") show first floor levels approximately 1.5 to 2.0 feet above exterior grade (itself at 5 feet above high water?), which would be consistent with the 1890 floor elevation for the insane hospital (Shell House I) of 6.75 feet above high water (figure 13 and table 1). The drawing of hospital building "B," however, suggests that grade was only 2.5 to 3.0 feet above high water. This was presumably erroneous. The 1897 program for the design competition for the second immigration station is also likely to have been in error in stating that the boardwalks remaining from the first station were only 2.5 feet above high water (Unrau 1981:602). The coal wharf north of the first powerhouse was shown as having an elevation of 4 feet above high water on a c. 1897 drawing (Dwg. No. 356/43.963:4).

The wharfs, then, were 4 to 5 feet above high water, and the first floors of the powerhouse and the main building of the first station were evidently about 0.5 foot higher (Dwg. Nos. 356/43.970:14 and 29). The elevations of ground surfaces in areas of fill beneath wharves and buildings may have been in the range of 1 to 4 feet above high water.

Following the destruction of the first immigration station in 1897, boring and test pitting was done on the site of the new main building (figures 24 and 25). Among the data recorded were surface elevations for the area relative to an arbitrary benchmark. (The benchmark was assigned an elevation of 30.0 feet; its actual elevation, as extrapolated using information on NPS-DSC Dwg. Nos. 356/42.900:14 and 25.015:11, was approximately 11.0 feet A.M.S.L.) The range of elevations is approximately 2.0 to 5.0 feet above high water. The higher elevations occur in the area of the original island. The lower elevations are in an area of c. 1890 fill, at the southwest margin of the building site. The east half of the building site overlaps the former area of Fort Gibson, and elevations in the area are about 1 to 1.5 foot lower than in 1890, which suggests that grade there was reduced during development of the first immigration station.

The borings and test pits also revealed other archeologically relevant data, including the characteristics of the fill soils (sand, gravel, clay, "earth," and "mud") at the southwest margin of the building site. In test pit F located close to the southeast end of the original island, where the battery was formerly situated, the discovery of a lens of "blue silt with vegetable fiber" at an elevation of about 1.5 feet A.M.S.L. suggests that organic material (a former beach?) was buried beneath fill prior to construction of the fortifications. The boulders at the base of test pits E-1 and E-2, near the southwest shore of the original island, may have been purposely placed early in the nineteenth century to protect the island from erosion (see figure 4). The "seam" located in test pit A, about 3.25 feet A.M.S.L., probably indicates some former grade there. The low elevation suggests that the area may once have been excavated below original grade.

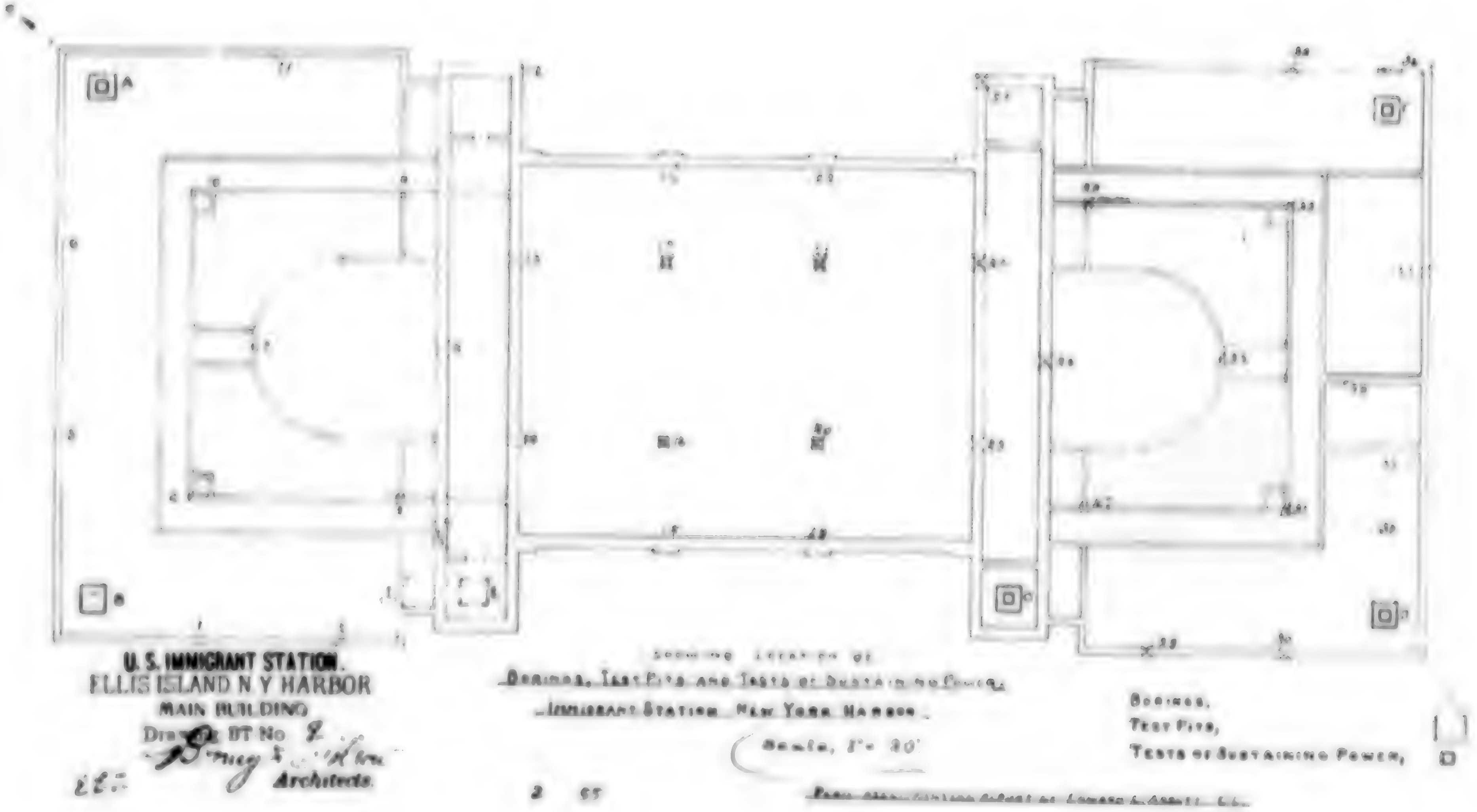


FIGURE 24. 1898 Plan of Main Building (NPS-DSC Dwg. No. 356/41.982:2 / not to scale)

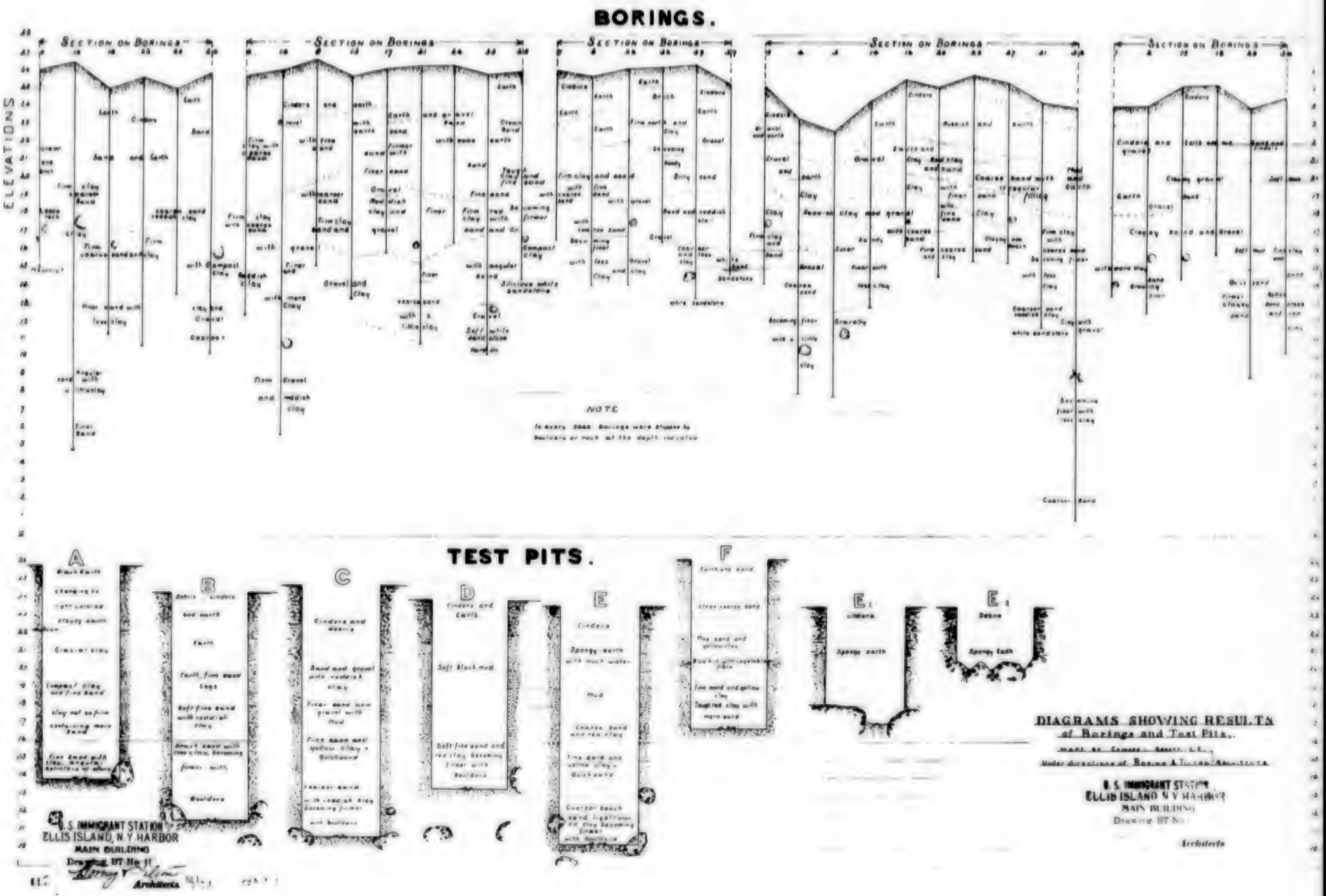

BORINGS.
SECTION ON BORINGS
ELEVATIONS
NOTE
In every case borings were stopped by boulders or rock at the depth indicated
TEST PITS.
A
B
C
D
E
F
E1
E2
DIAGRAMS SHOWING RESULTS of Borings and Test Pits.
U.S. IMMIGRANT STATION
ELLIS ISLAND, N.Y. HARBOR
MAIN BUILDING
Architects

FIGURE 25. 1898 DIAGRAMS

(NPS-DSC Dwg.No. 356/41.962:4/Not To Scale)

In boring no. 11, the "masonry?" at 4.0 feet below mean sea level is presumably the base of the c. 1891 cisterns located in that area. As previously discussed, these cisterns were uncovered and mapped during foundation work on the main building, and were found to have the same basal elevation (NPS-DSC Dwg No. 356/41.962:29). A circular cistern, 10.0 feet in diameter and 8.0 feet deep, was also located during foundation work, near the northwest tower of the building. The precise location and origin of this cistern are unclear.

Boring and test pitting was done in 1907 prior to construction of the baggage and dormitory building (figure 26). Although another benchmark was employed in determining elevations, its level was congruent with that of the previously used benchmark. (Consequently, an elevation of 30.0 feet remained approximately equal to 11.0 feet A.M.S.L.) The surface elevations, which ranged approximately from 5.0 to 7.0 feet A.M.S.L., may have been somewhat higher than existed in the area during the 1890s, due to construction and landscaping during the intervening years.

The southwestern quarter of the B and D building site is in the area of the original island, while the northeastern three-quarters is an area of fill dating to 1894-1896. The rock filled cribwork located about 5.0 feet below grade (approximately 2.5 feet A.M.S.L.) in test pits 5 and 7, toward the west corner of the building site, probably derives from the island's 1891-1894 bulkhead. The brick located 4.5-5.0 feet below grade in boring nos. 11 and 12, near the south corner of the building site, is likely to represent footings at or near the east corner of the "insane hospital" (formerly Shellhouse No. 1), close to the shore of the original island. The cistern located in test pit 18 is part of the set of cisterns discussed above. The three terra-cotta pipes in the trench (test pit 17) presumably derive from drainage lines or sewers located between the set of cisterns and the insane hospital. (Toilets were situated in a small addition to the northwest side of the insane hospital located directly southwest of the trench.) The cast iron pipes located in test pit 15 are likely to have conveyed fresh water between the cisterns and the boiler house (as illustrated in figures 17 and 18). The walls and footings in test pit 4, and the cast iron pipe and steel cable in test pit 5, must also have been associated with the boiler and engine house.

The remaining test pits were all within the area filled between 1894 and 1896. The layering of fill in test pit 10, at the southeast edge of the building site, may be due to its location very near the site of the 1891-1897 hospital kitchen. The crib located in test pit 14, near the north corner of the building site, is unlikely to represent any former bulkhead, and it was not noted as having rock fill. It may have been structural debris such as found in test pit 6 in the same area. The area of test pits 13, 16, and 19 in the center and northwest of the building site was evidently filled fairly homogeneously with cinders.

Drawings and photographs which depict the buildings of the second immigration station document that existing grade in the vicinity of these buildings was established soon after their construction. Along the edges of Ellis Island, however, significant modifications of grade continued, together with further expansion of the island, until completion of the island's seawall in 1934-1935. Elevations on

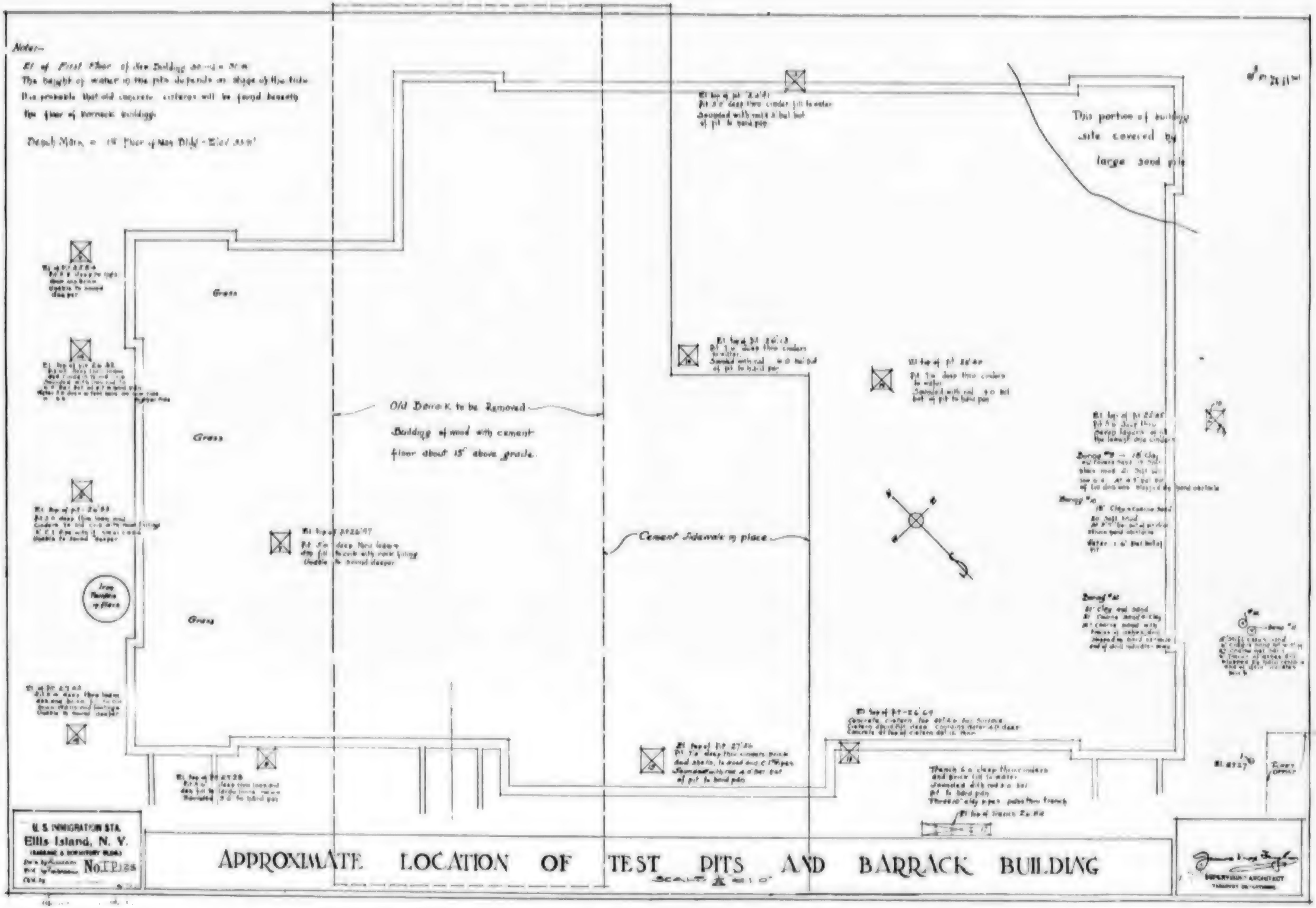
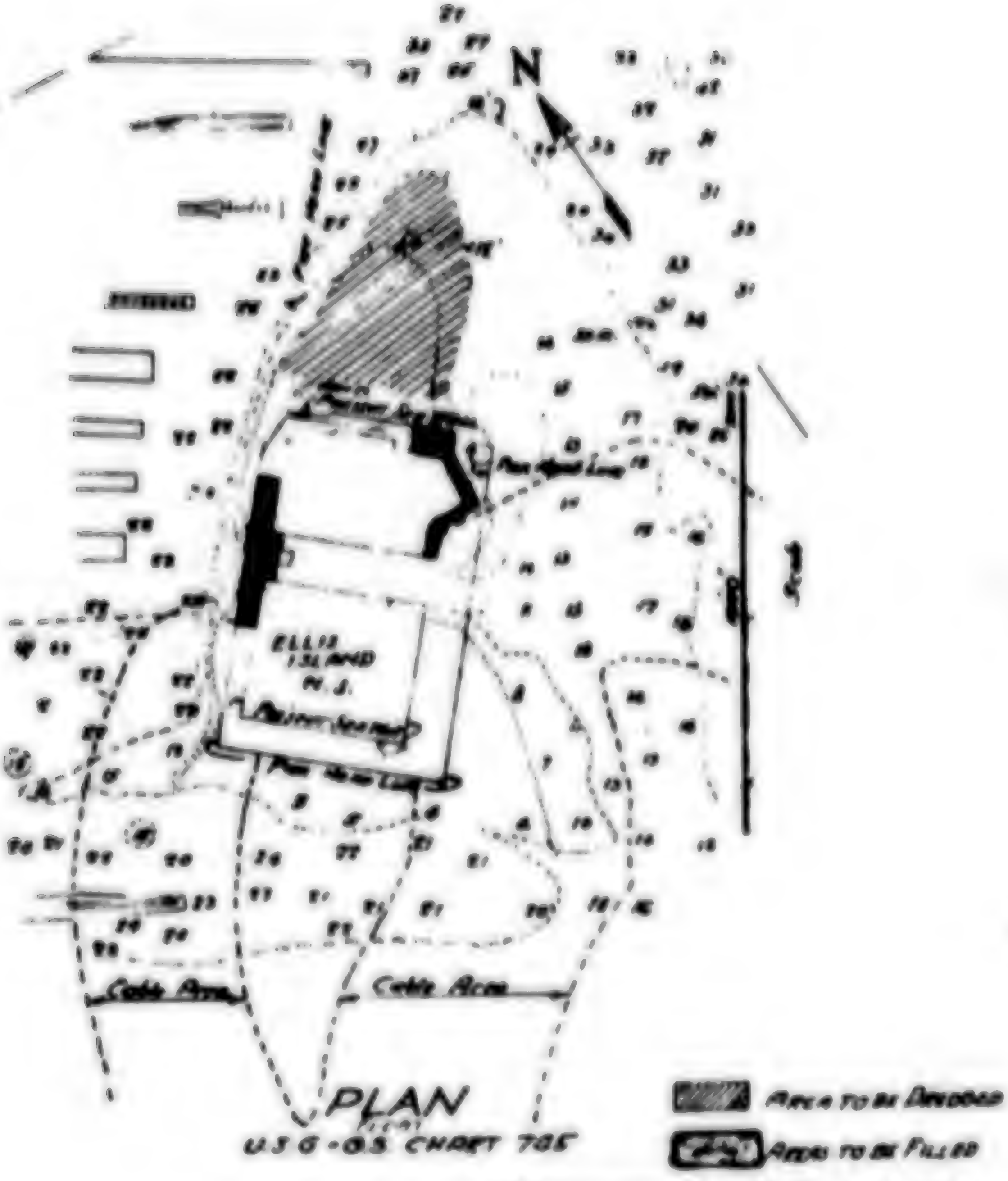

Notes–
The height of water in the pits depends on stage of the tide
It is probable that old concrete cisterns will be found beneath the floor of barrack buildings
Old Barrack to be Removed
Building of wood with cement floor about 15" above grade.
Grass
Grass
Grass
Cement Sidewalk in place
This portion of building site covered by large sand pile
U. S. IMMIGRATION STA.
Ellis Island, N. Y.
No. I.P.188
APPROXIMATE LOCATION OF TEST PITS AND BARRACK BUILDING
SUPERVISING ARCHITECT

FIGURE 26. BARRACKS BUILDING TEST PITS, 1907

(NPS-DSC Dwg. No.. 356/41.902A:28 / not to scale) drawings made in 1935 and 1936 are consistent with the existing grade of the island. These drawings are "Final Survey/Ellis Island Sea Wall Project" (Apr. 10, 1935; NPS-DSC Dwg. No. 356/43.962:10) and "Contours and Grade/Island No. 1" (June, 1936; NPS-DSC Dwg. No. 356/43.967:29).

A c. 1929 foundation plan for the two water towers situated between the B and D building and the powerhouse (NPS-DSC Dwg. No. 356/43.958:7) indicated the discovery of "old masonry 18 inches below concrete walk" in the area of the south tower. These features are undoubtedly the foundations of the 1891-1902 powerhouse (see figure 18). Their extant elevation would have been about 6.5 feet A.M.S.L. Construction of the water tower foundations would have necessitated removal of some portions of these features, while other portions are likely to have been left in place.

The 1935 drawing ("Final Survey/Ellis Island Sea Wall Project") is also one of at least four which document dredging in areas near the island other than the ferry basin. The area indicated, along the northeast seawall directly southeast of the island's north corner, was dredged to depths of 18 to 21 feet below mean low water. Dredging in that area is likely to have necessitated removal of the wreck shown on the 1933 plan for dredging (figure 27). Another plan for dredging (NPS-DSC Dwg. No. 356/43.969:3), dated Apr. 15, 1916, indicates that shoals were located in the same vicinity, and the absence of the wreck suggests it originated subsequent to that plan. The wreck may have been of a barge set adrift, burning, during the July 30, 1916, destruction of the Black Tom Pier (Kardas and Larrabee 1976:44). A 1914 drawing (NPS-DSC Dwg. No. 356/43.969:2) shows an area dredged in the vicinity of Island 2.



To be dredged to 12' below M.L.W.
About 110,000 cu yds to be dredged
and deposited behind New
Sea Walls

PLAN SHOWING AREAS TO BE
DREDGED FOR THE PURPOSE OF
OBTAINING FILL TO BE USED BEHIND
SEA WALLS, ELLIS ISLAND, N.J.
Sketch #2

APPLICATION BY
TREASURY DEPARTMENT
10-12-1933

FIGURE 27. 1933 Plan for Dredging

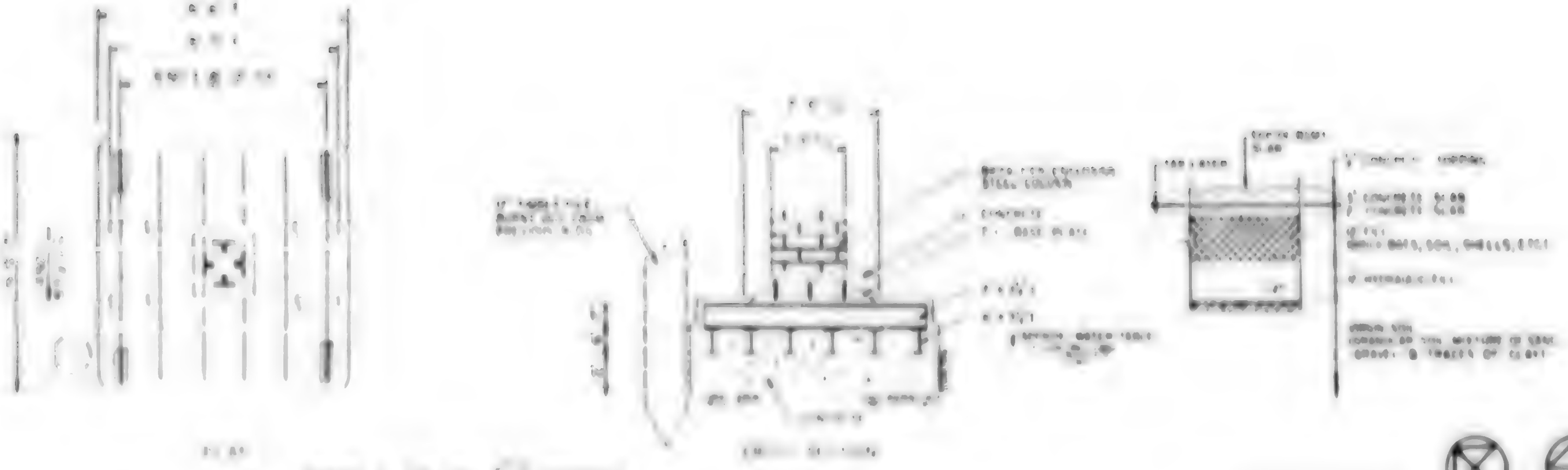
A detail on plans of the island dating to 1896 (figure 14, above) and 1913 (figure 20) is of some interest archeologically. A "gibbet tree," presumably used for executions during the early nineteenth century, is identified in two distinct locations on these plans, made before and after the development of the second immigration station. In both locations there were evidently large trees prior to 1890, and the locations, toward the northwest end of the island, correspond generally with those of two small trees on an 1813 plan (figure 4). The 1896 gibbet tree was located near the north corner of the second main building, and it appears, dead, in photographs of the building taken during construction in 1900 (Unrau 1981:641-642). The 1913 gibbet tree was located about 100 feet northwest, near the K and L building, and it appears in photographs dating to 1892 and 1901. This gibbet tree is also shown on one plan dating to 1916 (NPS-DSC Dwg. No. 356/43.967:7) but not on another made the same year (Unrau 1981:664). It subsequently disappears from the cartographic record.

Two prints of a 1952 plan of the island entitled "Plot Plan/Outside Fire Protection" (NPS-DSC Dwg. No. 356/43.965:16 and 17) contain archeologically significant details. On one of the prints, the area between the B and D building and the former recreation shelter to the north (where the large reserve oil tank was to be erected) is circled and this note added: "This area -- fill on top of old dock -- timbers and planking rotted -- water below." Evidently, the dock there, which a 1933 plan identified as a "rotted timber platform," was simply buried beneath fill during the mid-1930s. Both of these prints of the 1952 plan show that a water line and fire hydrant northeast of the main building's east wing were moved further east than originally planned, possibly to avoid buried structural remnants (see figure 23).

An engineering investigation of column footings in the basement of the main building, conducted in 1977-78 by the Office of Irwin G. Cantor, P.C., revealed details regarding the footings' construction and their general structural soundness (IGC 1978:21-22). Also revealed was a burnt stump of timber, 1.0 foot in diameter, standing vertical adjacent to the west (grid southwest) corner of the footing for column 4 (IGC 1978:20). This feature (figure 28), at the time interpreted as deriving from a "point bearing pile," most likely represents one of the lightposts associated with the first immigration station (see figure 18).

Kardas and Larrabee's assessment of the probable effects on archeological resources of dredging the Ellis Island ferry basin and approach channel, prepared in 1976, was the first attempt by professionals at predicting the characteristics and significance of such resources on and near the island.

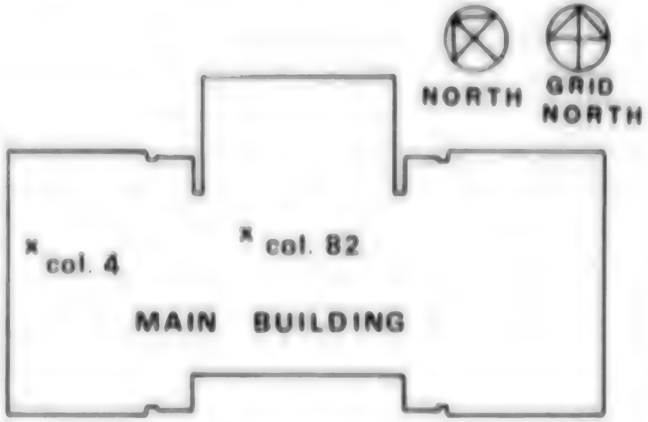
In making their assessment, Kardas and Larrabee relied primarily on documentary data, but two areas of fill soil exposed by seawall decay and erosion along the northeast side of Island 2 were examined. The fill examined near the ramp northeast of the hospital administration building "consisted of strata of gravelly sand covered by ashy soil covered by brown top soil, each layer between 1 foot and 2 feet thick" (1976:46). There were evidently few artifacts in these layers of fill, which Kardas and Larrabee suggest originated during or soon after construction of the seawall there between 1916 and 1919. The fill in the second area examined, at the east corner of Island 2, may have a similar origin. There about a half-foot of topsoil was found over a layer of ashy clay also about one-half-foot thick, "below



DETAILS OF COL (4) FOOTING

DETAILS OF COL (82) C1 BASE PLATE

NOTES
1. [illegible]
2. [illegible]



LOCATIONS

FIGURE 28. FOOTING CHARACTERISTICS - COLUMN NO. 4 - MAIN BUILDING

(from Irwin G. Cantor, Job No. 76039, Dwg. No. 3) which was a soft stratum of incinerated garbage, ash, and clinkers, at least 2 feet thick." The incinerated material, some of which had been subjected to heat sufficiently high to fuse glass, evidently contained late nineteenth century artifacts (1976:46).

Not surprisingly, the documentary data which Kardas and Larrabee review in greatest detail concern the ferry basin, particularly previous dredgings, wash borings, and seawall characteristics. Their review of the probable physiographic history of the island, their discussion of its potential prehistoric resources, and their collection and reproduction of various historical maps showing the island are also of considerable value. The conclusions which Kardas and Larrabee reach are as follows:

> 1. Previous episodes of dredging in the ferry basin (to a depth of up to 20 feet below mean low water) have destroyed all significant cultural resources there, except for the sunken ferry boat Ellis Island and stones which have fallen from the island's seawall (1976:31-32, 51-52).
>
> 2. Prehistoric sites are likely to have existed, and may in part still exist, on Ellis Island and on the slopes of the hill from which the island originated (1976:51).
>
> 3. Evidence of the early history of the island is likely to be preserved below the exogenous fill at its surface - specifically such uses as "occasional 17th and 18th century oyster collecting, later 18th to 19th century pirate hangings and possible burials, and late 18th and 19th century harbor defense fortifications ..." (1976:19).
>
> 4. Remnants of the first immigration station are likely to be preserved below the surface of the island (1976:22, 51).
>
> 5. Ellis Island is now in large part comprised of late nineteenth century metropolitan midden in the form of incinerated garbage (1976:47, 51).
>
> 6. The Black Tom Pier explosions of 1916 may be reflected on the island by occurrences of "shrapnel, possibly unexploded shells, broken roofing and quantities of shatter-glass ..." (1976:44-45).

If present, the unexploded shells which Kardas and Larrabee hypothesize are located in the area of the former basin between Islands 2 and 3 would be beneath several feet of fill. There is, however, no positive evidence for their presence.

The conclusion that massive quantities of "metropolitan midden" lie beneath the surface of Ellis Island is apparently based on the observed characteristics of the fill at one location on Island 2, and it probably does not accurately depict the general composition of the island's fill. Kardas and Larrabee suggest that such midden deposits constitute an important cultural resource. In my view, however, it is unlikely that such deposits could contribute significantly to our understanding of past human activity in the region. They are, furthermore, not among the qualities of the site which qualify it for inclusion on the National Register of Historic Places. The conclusions which Kardas and Larrabee reach are otherwise an accurate general assessment of the island's archeological resources.

Certain of the archeological resources on Ellis Island were described and assessed in connection with archeological monitoring of excavations in the basement of the main building. The excavations, made in 1980 and 1981 to examine the condition of several columns below the basement floor level, involved removal of the half-foot thick concrete floor slab and of the soil below (to depths of at least 6.0 feet) in areas roughly 6.0 feet square centered on the columns (Shallenberger and Rothschild 1981:2, 6). The excavations were confined to the southern third of the building's east and west wings, locations for the most part outside the area of the original island.

Of the 39 excavations, 11 were monitored, with a focus on those located closest to the island's original shoreline.

The soil below the basement floor was reported to be relatively homogeneous fill, apparently deposited in one episode. It was described generally as "sandy silt, reddish brown to medium brown in color with oyster shell, pockets of ash, cinders, burned wood and architectural debris." The top foot of fill was hard-packed and overlay another foot of loosely-packed fill more densely laden with cinders and slag. "Below this was silty fill with a large amount of architectural debris" (1981:8). The extent of disturbance to the fill which occurred during construction of the existing building was not determined. It is possible that the soils observed were almost entirely backfill from construction of the column footings. Artifact density, exclusive of architectural debris, was relatively low. Most of the non-architectural artifacts derive from middle to late nineteenth century utilitarian objects, primarily bottles and crockery (1981:9-11).

Architectural features were discovered at a depth of about three feet beneath the floor of the east wing. Remnants of cut stone walls (?), evidently dry-laid, were found running east-west at the north margin of the excavations around columns 118 and 144. These features presumably derive from nineteenth century structures at the shore of the original island (figures 29 and 30). In other excavations in the same vicinity, boulders were encountered which may have been used to stabilize the island's beach. The soil associated with these features and the boulders was fill (1981:5-6, 13).

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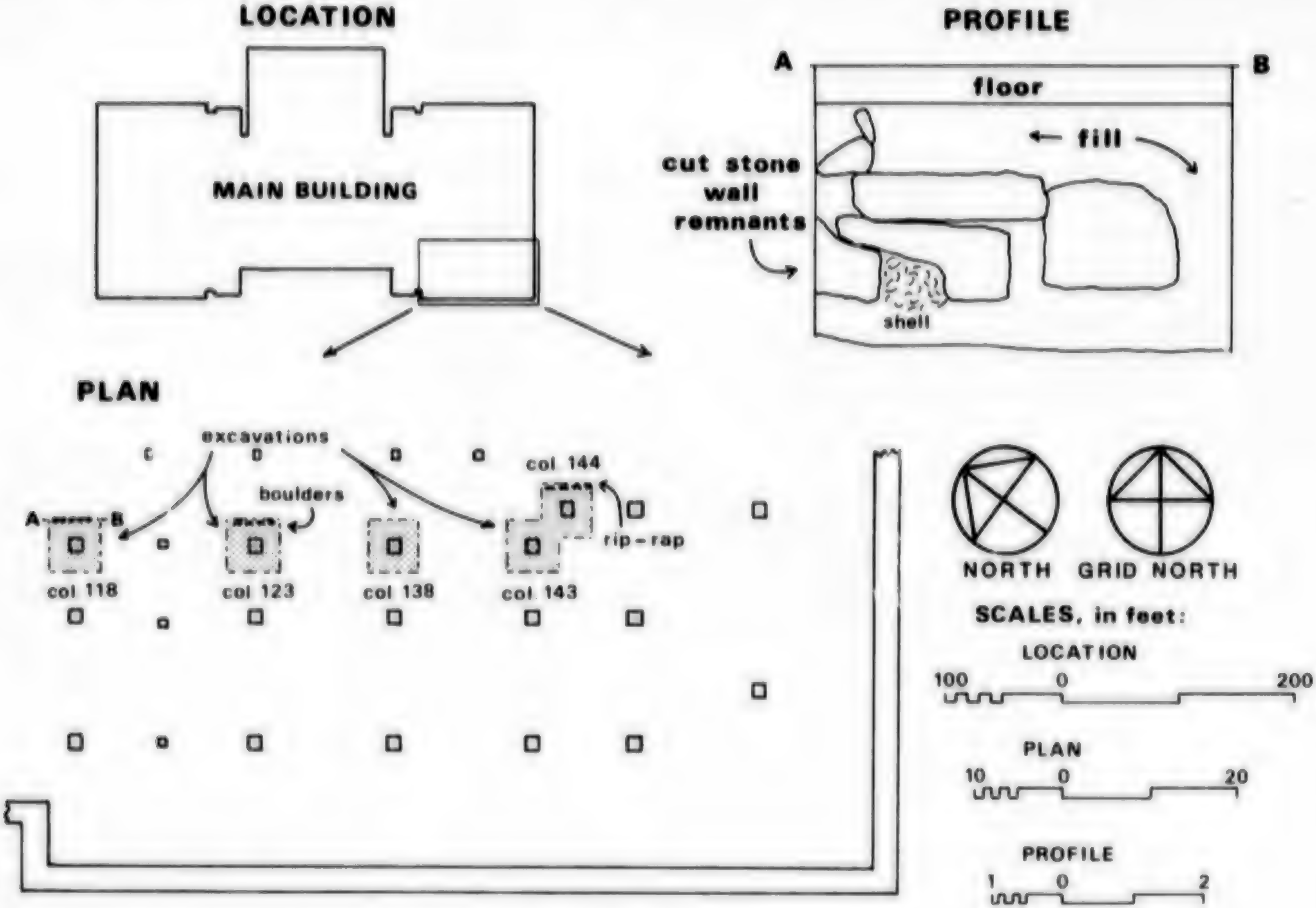

FIGURE 29. FEATURES LOCATED in 1981
SOUTHEAST AREA of MAIN BUILDING - ELLIS ISLAND

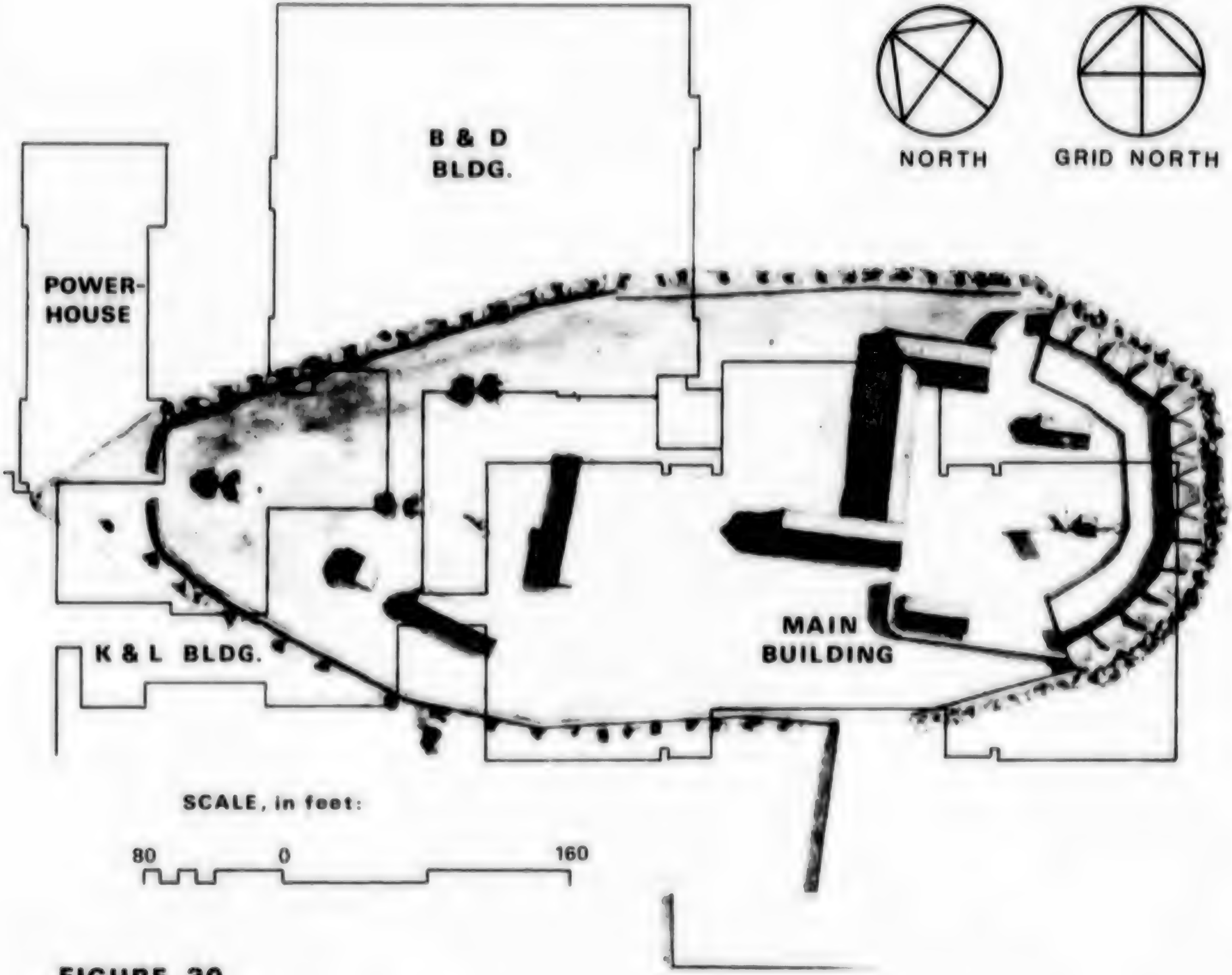

FIGURE 30.
RELATIONSHIP of c. 1813 ISLAND to EXISTING STRUCTURES

Two brick and cut stone footings, running north-south, were discovered 16 feet apart at depths of 0.5 to 3.0 feet below the basement floor of the west wing (figure 31). One was located about 3.0 feet east of column 8 and was based on large boulders in a matrix of orangish-red clayey silt. The other was located 16 feet further east, between columns 13 and 29, and at its base was predominately orange-red clayey silt. The soil beneath these features was evidently sterile (1981:12).

Each of these features, although disturbed, appears originally to have consisted of a square brick pier (?), between 3.0 and 4.0 feet across (possibly more at its base), joined along its north side to the south end of a stone wall approximately 1.75 feet wide. The origin of these features was not recognized at the time but they undoubtedly derive from the previously described foundation of the first main building, constructed in 1890-1891. There is no evidence of any other structure previously located in the vicinity, which the boulders suggest was at the shore of the island prior to 1890. It is perplexing, however, that the bricks in one of these features were reportedly handmade, with a likely pre-1850 origin, and that a lime mortar was used in construction (Shallenberger and Rothschild 1981:12, 29-31). It is possible that bricks from some earlier structure on the island were reused.

Shallenberger and Rothschild conclude that, due to their low density and relative modernity, the artifactual resources within the fill they observed were "unlikely to be significant cultural resources" (1981:13). Lacking a firm interpretation for the structural remnants discovered, they suggest that these resources likewise are not

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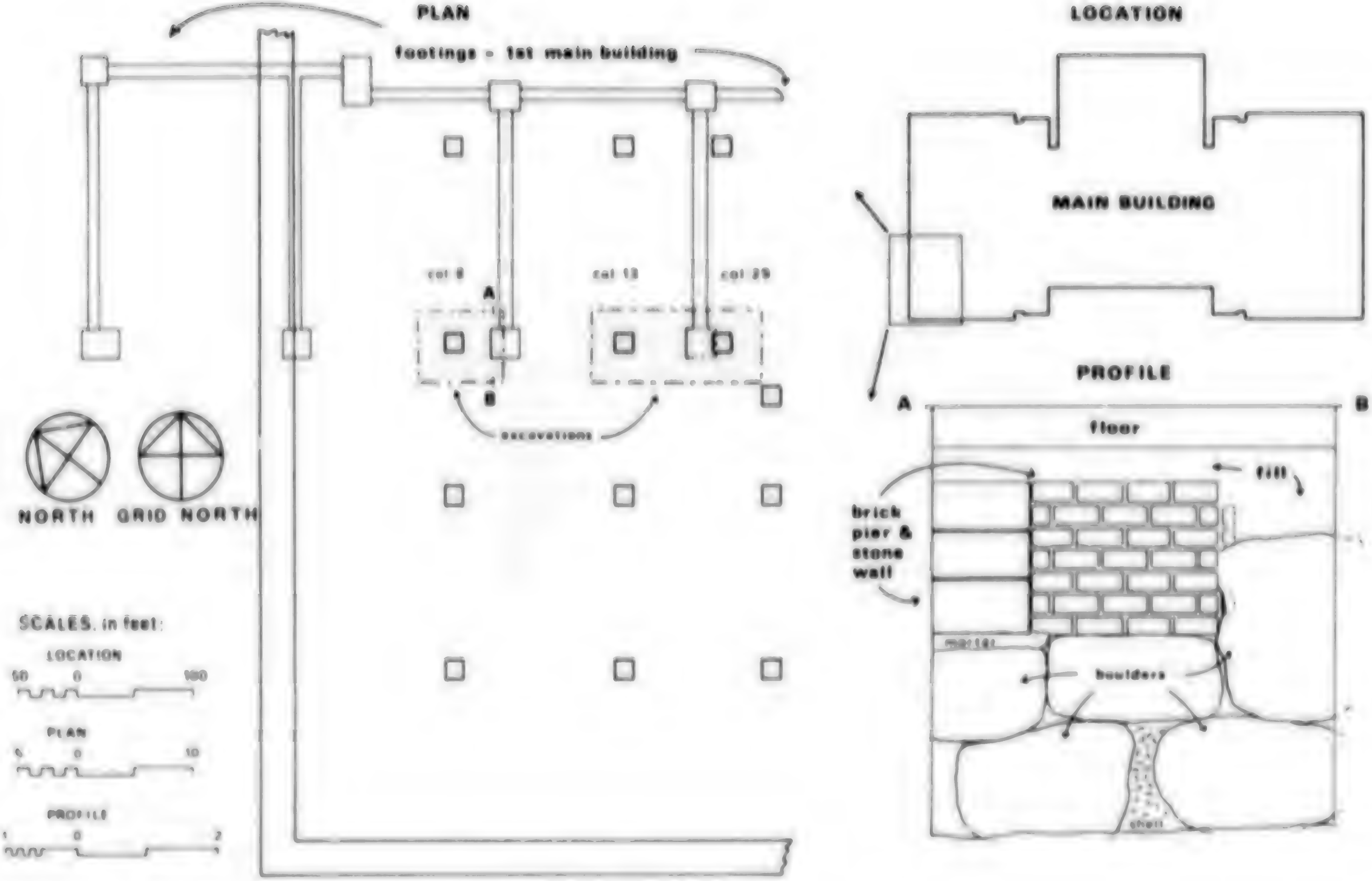

FIGURE 31. FEATURES LOCATED in 1981
SOUTHWEST AREA of MAIN BUILDING - ELLIS ISLAND

significant, and ineligible for nomination to the National Register of Historic Places (1981:14). The first conclusion appears warranted, but the second, made with regard to the project which the authors monitored and the resources it affected, is not generally applicable.

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ARCHEOLOGICAL SURVEY OF THE ISLAND

Objectives

The May, 1984, survey of Ellis Island was made to locate and identify artifacts at and near the surface of the island, and to assess their relationship to the second immigration station and the associated hospital. It was also intended to record significant landscape features and surface soil characteristics.

As discussed above, the artifacts were expected to reflect usage of open spaces on the island by immigrants and patients and by the staff of the station and hospital. The out-of-doors activities of immigrants and patients would have been primarily recreational or therapeutic. Artifacts resulting from these activities were expected generally to have a low density, and to be largely absent from the formally landscaped areas of the island fronting the ferry basin, where such activities would not routinely have taken place. Except for some of the activities associated with the maintenance and modification of structures, with the operation and upkeep of mechanical systems (power plant, furnaces, water and sewer lines, etc.), with debris disposal, and with gardening, the institutional activities of the island's staff would have been largely confined to the interior of buildings. Artifacts deriving from "outdoors" institutional activities, however, were expected to be broadly distributed in most areas of the island, and to be relatively abundant at the northwest end of the island (especially of Island 1) where docks, incinerators, powerhouses, and shops were situated. Some artifacts reflecting various indoors activities (e.g., medical care, record keeping, personal grooming and hygiene) were expected to have been deposited on the surface of the island due to occasional departures from routine debris disposal procedures, which generally provided for removal of debris from the island.

It was anticipated that some artifacts would have exogenous origins unrelated to the immigration and hospital facilities, due to the massive amounts of fill on the island and to ground disturbances.

Methods

The ground surface of Ellis Island is for the most part obscured by lawn or by decaying vegetable matter, which hinders a simple visual inspection to locate artifacts. Consequently, for the archeological survey it was necessary to expose the surface soil at regular intervals to examine it for artifacts. On Island 3 and the southwest half of Island 2, the surface soils were examined without being sifted, as transporting a screen for sifting through these areas of fairly dense vegetation would have been too time consuming. Trowels were used in these areas to scrape decaying vegetable matter from the soil surface, and to excavate and sort through the exposed soil. The locations of these small test excavations, which were generally 1.0 foot in diameter by about 0.5 foot deep, were determined using existing structures for orientation and spacing. Artifacts discovered at these locations were collected and their provenience recorded. Artifacts observed at other locations in the same areas (e.g., along drip lines adjacent to buildings) were noted but, with few exceptions, not collected. Soil characteristics and features, where apparent, were also noted.

The northeast half of Island 2 and nearly all of Island 1, areas mostly having lawns, were tested by excavating small pits (1.0 to 1.5 foot in diameter by 0.5 to 1.5 foot deep) using shovels, and by sifting the excavated soil through quarter-inch mesh screening to recover artifacts. These shovel test pits (STPs) were spaced at an interval of 25 feet. Discovered artifacts were collected and their provenience recorded. Soil characteristics and features were again noted. Since the purpose of the survey was to locate artifacts at and near the island's surface, these small test excavations extended no deeper than the topsoil.

At the northwest end of Island 1, sifting the soil to recover artifacts was again dispensed with. This was done because artifacts there, although abundant, were clearly of modern origin and not altogether related to the activities of the immigration station. A large number of artifacts was nonetheless collected, in part by means of trowel excavations, at several locations in the area.

Because of their present condition or previous history, some areas of the island were excluded from the survey. Areas adjacent to the seawall at the northwest, southwest, and southeast sides of Islands 2 and 3 have had their archeological integrity destroyed by severe erosion and other disturbances, and by extensive modern filling. Consequently, these areas were not systematically surveyed, and artifacts present in them were not collected. Areas filled during the mid-1930s were also excluded from the survey. This was done in part to expedite the survey, as the most extensive of these areas -- between Islands 2 and 3 -- presently has nearly impenetrable vegetation. However, these areas are unlikely to contain much data specifically pertinent to the activities of the immigration station, which had passed its peak several years earlier. Furthermore, the data they contain are likely to be duplicated within other areas of the island. The large fill area surrounding the "new immigrant building" northwest of the ferry building may never even have been incorporated into the operation of the immigration station. Other areas excluded from the survey are located at the east corner of island 1 (filled in the mid-1930s) and north and northwest of the baggage and dormitory building (disrupted due to construction in the late 1920s and again in the early 1950s).

References to north and other cardinal directions in the discussion which follows are in terms of the architectural grid. Under this system, in keeping with the orientation of structures on the island, "north" corresponds with what is actually northeast, and other directions are likewise adjusted.

Findings -- Island 1

The survey of Island 1 involved excavation of 324 small test pits throughout nearly the entire open area of the island. To facilitate discussion (and tabulation) of the findings, these excavations are grouped into spacial units designated with letters A through ZZ (figure 32). Somewhat more than 1200 artifacts were collected on Island 1, roughly half of which derive from construction related activities (fragments of window glass, tiles, nails, etc.). Fragments of food-service ceramics and of bottles were also common. Small amounts of various other artifacts, and of bone, were also recovered. The characteristics of artifacts generally, and their provenience, are summarized in table 2, while objects of particular interest are noted

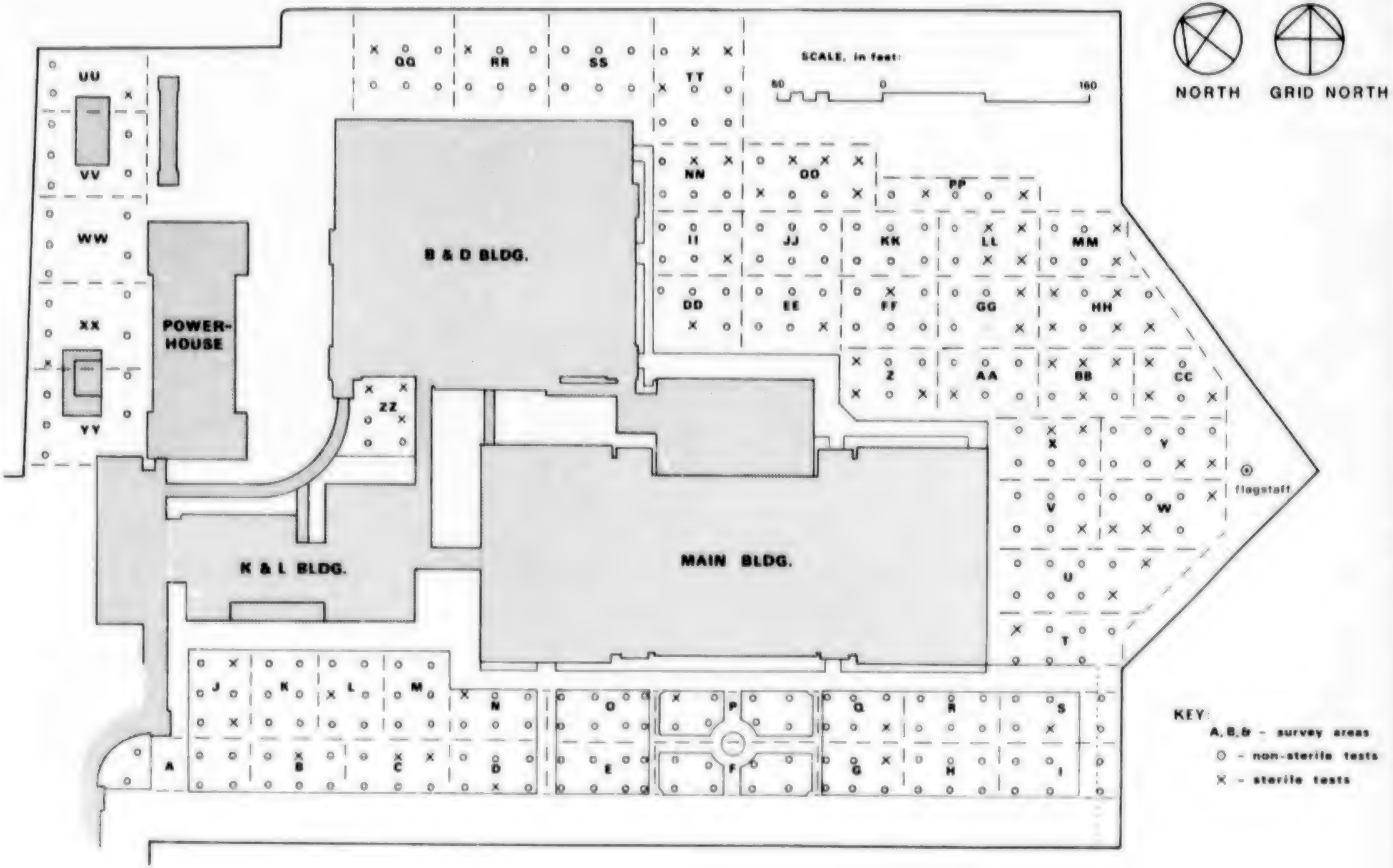


FIGURE 32. PLAN OF ARCHEOLOGICAL SURVEY
ISLAND 1 - ELLIS ISLAND

TABLE 1. SUMMARY OF ARTIFACT PROVENIENCE, ARCHAEOLOGICAL SURVEY OF ISLAND 1, ELLIS ISLAND

	Provenience (Areas):																																																			
Artifact Categories	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF	GG	HH	II	JJ	KK	LL	MM	NN	OO	PP	QQ	RR	SS	TT	UU	VV	WW	XX	YY	ZZ	Total
Food Service Ceramics																																																					
Decorated Porcelain																																				-		-	-	-	-	-	1	1	7	-	17	3	-	-	20	-	49
Undecorated Porcelain	-	-							1		1						1				1	1	1				1			-	1	-	-	-		2	1	-	1	-	-	-	-		-	2	3	-	-	-	10	-	27
Decorated Whiteware	1		1		1	-	1	1	1	-	-	1	1	-	1	1	1	1	1	1				1	1		1			1	-	-	-	-	1	1	1	-	-	-	-	-	-		-	-	-	-	-	-	-	2	26
Undecorated Whiteware	1		1	4	1	2			1	1	1	1	1	1			1		1	1	-	1	1	2	1	1	1			-	-	-	-	-	2	-	1	-	-	-		-	-	-	-	2	-	-	-	-	-	1	44
Other	1	-	-	-	1	-	1			-				2		1	1			1	1			1									1	-	-	1	1	-	1	-	-	-	-	-	-	-	-	-	-	2	-	-	18
Bottles and Bottle Frags.	1	1	-	1	1	1	1	1	1	-	1	1	2	1	1	1	2	-	1	1	2	7	4	3	5	1	15	1	1	5	14	2	-	2	-	4	2	-	2	1	-	-	2	1	1	1	3	1	2	3	42	3	176
Window Glass Frags.	4	9	1	2	2	11	7	9	9	4	4	8	8	5	10	3	6	4	4	4	4	4	1	1	1	5	2	1	1	14	1	8	-	-	10	10	14	3	2	6	4	3	-	3	15	11	1	12	16	8	45	-	348
Structural Ceramic and Mortar Frags.	6		1	1	2	4		1	4				1	2	1	1		1	1	1	1	2	1		4		1			1	2	-	-	-	1	1	12	-	-	-	16	-	5	6	1	-	1	14	6	5	11	-	114
Other Structural Materials	1	-	1	1	1	4	-	1	1				-	1	[illegible]	1	1	2	1	[illegible]	1											1	-	-	-	-	1	-	-	-	2	-	-	-	1	-	-	-	2	-	1	1	39
Nails and Spikes	1		1	1	1	1		1	1	1		1			1	1	7	1	1			1	1	1	1	-	1			2	-	2	-	-	-	-	1	-	-	1	1	-	-	1	1	3	-	3	6	2	9	3	63
Miscellaneous Hardware	-	1	-	1	1	-	1	1		-							2			1	-	1														1	-	1	1	-	1	-	-	-	-	2	-	10	1	1	11	-	41
Light Bulb and Fixture Frags.	-	-			2	2	-	-		-				1	-	1	1	-	1	-	-			1	-			1														1	-	-	-	-	-	-	-	-	1	-	14
Misc. Materials Unidentified:																																																					
Ceramic	1		4		[illegible]	[illegible]	[illegible]	1	1	1	1	1	1	1	1	4		1	1		1	1			1					4	1	1									6			1	1				1	1			41
Leather			1					1																	1						1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	6
Other Metal																1	1		1		1																	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	11
Glass			1		1		1	1	1		1	1	1	1	1	1			1		1	1	1							1		-	-	-	1	4		-	-	2	1	1	-	2	5	3	1	-	2	3	9	2	56
Plastic	1	1			1	1				1	1	1		1	1	1				1	1		1		1			1			1	-	2	-		1		-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	29
Wood							1												1		1												1	-				-	-	-	-	-	-	-	-	-	-	-	-	1	16	-	24
Other:																																																					
Cloth	1	1					1			1										1	1	1	1										1	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8
Plastic Comb Frag.																																								-	1	-	-	-	-	-	-	-	-	-	-	-	1
Cloth Scraps																									1															-	-	-	-	-	-	-	-	-	-	1	1	-	5
Shoe Sole																							1																		-	-	-	-	-	-	-	-	-	-	-	-	1
Buttons																									2		1			1	-	1						-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
Bead																																									1	-	-	-	-	-	-	-	-	-	-	-	1
Pencil Frags.	-	-			-	-																																			-	-	-	-	-	-	-	-	1	-	-	-	1
Porcelain Jar Lid Frag.	-	-			-	-	-					1																													-	-	-	-	-	-	-	-	-	-	-	-	1
Clinical Thermometer Frag.																																			1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Spoon																																									-	-	-	-	-	-	1	-	-	-	-	-	1
Glass Tumbler Frag.																																						-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Percolator Top																																						-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Glass Lid Frag.														1																								-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Tobacco Pipe Frags.						1									1																							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Cigarette Filters and Match	-			1	-	-									1																																				-	-	4
Toothbrush	-			-	-	-																			1													-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Photographic Film Frags.	-																																																				3
Cal .22 Cartridge Casing	1																																																			-	1
Porcelain Knob Tube Hardware (?)																																						-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1
Mirror Frags.																																							-	-	-	-	-	-	-	-	-	-	-	3	-	-	3
Gasket																																							-	-	-	-	-	-	-	-	-	-	-	1	-	-	1
Glass Tube Frag.																																															1	-	-	-	-	-	1
Vehicle Headlight Frags.																																																	-	-	-	-	3
Key	-																																																	1	-	-	1
Washer	1																																					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Chain Link Fence Frag.	-								1						1					1	1																	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8
Terra-cotta Pot Frags.					1																									1	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
Various Plastic Objects													1																	1	-	-	-	1	-	-	-	-	3	-	-	-	-	-	1	-	-	-	-	-	2	-	11
Coin																																				1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Battery																																						-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	2
Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	14	25	4	[illegible]	[illegible]	[illegible]	[illegible]	5	7	23	29	62	4	10	10	[illegible]	5	9	15	40	[illegible]	[illegible]	41	59	18	[illegible]	12	1,231

below. Some of these artifacts are illustrated in figure 11. To a greater extent than was anticipated many of the artifacts discovered appear likely to have exogenous origins. The small size and fairly even distribution of fragments of window glass, bottles, and ceramics, many of which are very abraded or eroded (due, perhaps, to intensive, mechanically induced movement along with the soil containing them), suggests that much of this material came to the island, together with the surface soil, from elsewhere. Furthermore, artifacts such as a slip-decorated redware fragment (area A), a creamware fragment (area F), and fragments of clay tobacco pipes (areas F and G) are earlier historical items which are incongruous with the recency of the island's surface.

Testing in areas A through D, along the walkway at the west end of the ferry basin, yielded small to moderate amounts of mainly non-diagnostic artifacts (fragments of window glass, brick, terra-cotta block and tile, undecorated white earthenware, etc.). Among the diagnostic artifacts in these areas were: a broken or cut "Taylor" padlock (area A); a Cal .22 cartridge casing stamped with the mark ("U") of the Union Metallic Cartridge Co. (1867-1902, area A); 2 blue transfer printed whiteware fragments (areas A and C); 2 wood screws (areas B and D); and an 1897 U.S. penny (area B). A deteriorated boat was present in the planting bed, overgrown with ivy, at the west margin of area A. Lawns, partially shaded by regularly spaced plane trees, cover nearly all the remaining unpaved areas at the south side of Island 1.

Larger amounts of artifacts were located in areas E and F, along the ferry basin in front of the main building. Fragments of window glass and of structural wood were particularly frequent in area F.

Noteworthy artifacts from these areas include: a Rockingham/Bennington type earthenware fragment (area E); a glass insulator fragment (area E); fragments of photographic film (area E); a stem fragment of a red clay pipe (area F); and another Union Metallic Cartridge Co., Cal .22 cartridge casing (area F).

Artifact frequencies were moderate in areas G through I, towards the southeast corner of Island 1. A small fragment of plain white porcelain (area G), a blue transfer printed whiteware fragment (area G), a hand painted (?) whiteware fragment (area I), a 1940 U.S. dime (area G), and a scrap piece of galvanized chain link fencing (area I) were the only notable items found in these areas. Along the existing pavement at the south edge of area G, a buried concrete pavement or slab was evident in one test pit and in probes made nearby. This feature may derive from an earlier (c. 1902-1930) walkway configuration. It was located from 0.5 to 2.0 (?) feet below present grade and evidently extended about 4 feet north from the edge of the existing pavement. The pavement, evident along a 15 foot span east-west, had apparently been broken-up and buried in place. Toward the northeast corner of area G, two pieces of creosoted (?), tongue-and-groove wood planking, 0.5 feet wide by 0.25 feet thick, were located less than 0.5 feet below grade. These plank segments, one about 5 feet long, the other more than 10 feet, are likely to be displaced remnants of a former boardwalk.

Areas J through N, directly in front of the kitchen and laundry building, were like the adjacent areas to the south in having low to moderate amounts of artifacts. A 1914 Netherlands one cent piece (area J), a porcelain cosmetic jar lid fragment with floral molding (area L),

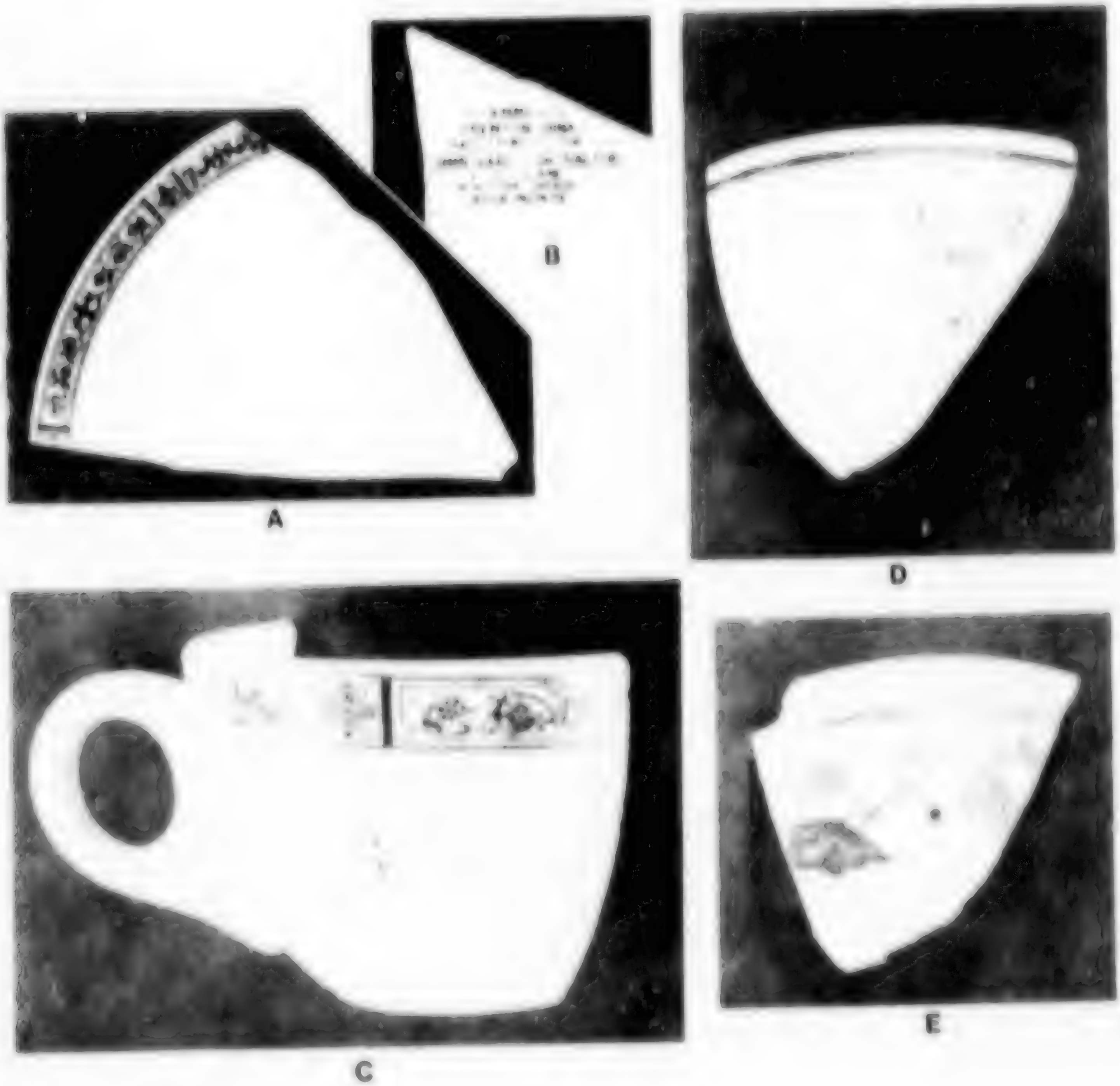


FIGURE 33. ARTIFACTS, ISLAND 1 SURVEY:

A) Ironstone plate fragment with Ellis Island commissary design, from area YY.

B) maker's mark on sherd fragment similar to A, area YY.

C) Ironstone cup fragment with Ellis Island commissary design, area UU.

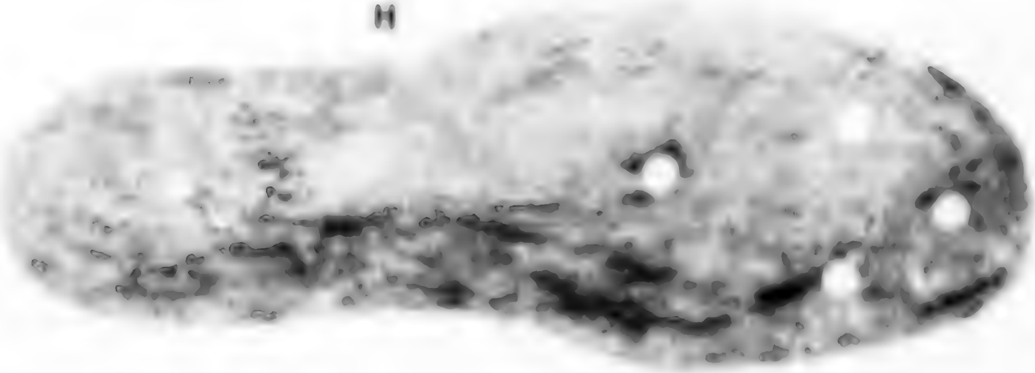
D) Ironstone cup fragment with U.S. Coast Guard emblem, area XX.

E) Ironstone bowl fragment with floral transfer-printing, area YY.

G

F

H



I

J

K

F) "Taylor" padlock, area A. G) silver-plated, cupreous alloy spoon, area JJ.

H) athletic shoe sole, area W. I) chert core/scraper 171, area 11.

J) U.S. one-cent coin, 1957, area B. K) Netherlands one-cent coin, 1919, area U.

(B, C, D, E, & F at actual size. A, G, & H at 1/2 x actual size.
I, J, & K at 2 x actual size.)

and another chain link fence scrap (area N) were the diagnostic artifacts found in these areas. At the southwest corner of the K and L building, it was evident from the exposure of undressed stone portions of the foundation that the east-west walkway there had been backfilled. Plans of the island indicate that steps, leading down to the west, were replaced by the existing sloped walkway sometime after 1939. A fire hydrant dating to the 1952-1953 improvements in the fire protection system is located along the west edge of area J, approximately 90 feet south of the K and L building. Another c. 1952 fire hydrant is located in the southeastern part of area M, about 60 feet south of the main building.

In front of the main building, larger quantities of artifacts -- primarily window glass fragments, nails and nail fragments, tar paper fragments, and several otherwise unidentifiable plastic fragments -- were located in areas O and Q, but only a moderate quantity was found in area P. A creamware fragment (area P), a blue transfer printed whiteware fragment (area Q), a white clay pipe bowl fragment and a chain link fence scrap (area O), and a terra-cotta flower pot fragment (area Q) were among the notable objects recovered in these areas.

Relatively small amounts of artifacts were found in areas R and S, near the southeast corner of the main building, among them a plastic belt or strap fragment and two fragments of decorated whitewares, one blue transfer printed and one green painted (area R). A c. 1952 fire hydrant is located along the south edge of area S, approximately 60 feet south and 55 feet east of the main building's southeast corner.

The soils on the south side of Island 1 consist generally of 0.75 to 1.5 feet of dark brown loam overlying a compact, lighter brown loam which contains a high density of stone, brick, and mortar fragments. At the east end of this part of the island, however, the surface soil consists of sand which is undoubtedly recent fill. A former concrete walkway along the entire eastern edge of the island was evidently removed in the course of modern repairs to the seawall there.

Low to moderate quantities of artifacts were located in areas T through Y, east of the main building, even though one-fourth of the test pits there contained no artifacts, compared with less than one-tenth at the south side of the island. Among the diagnostic artifacts from these areas are four coins: a 1945 U.S. five cent piece (area T), a 1919 Netherlands one cent piece (area U), a 1944 U.S. ten cent piece (area V), and a 1920 U.S. one cent piece (area X). In addition, a 1940 U.S. one cent piece was located, subsequent to the survey, on the pavement adjacent to the northeast corner of the main building. Other notable objects found in these areas are two blue transfer printed whiteware fragments (areas T and X), a green painted whiteware fragment (area Y), more chain link fencing scraps (areas T and U), an athletic (spiked) shoe sole (area W), and a small foam rubber ball (area Y).

The soils east of the main building were similar to those along the south side of the island, although the topsoil was for the most part shallower (0.5-1.0 foot). Toward the seawall at the eastern margin (and other edges) of the island, the topsoil appears to have eroded, leaving a gravelly, cinder-laden surface. An inactive electrical conduit, which may have provided for lighting of the flagstaff at the east "point" of the island, was located less than a half-foot below grade in the southwest part of area W.

The areas north and northeast of the main building (Z through PP) yielded widely varying amounts of artifacts. There was a tendency for larger quantities to be located in areas closer to the buildings, and for smaller quantities, and a greater frequency of test pits containing no artifacts, to be found away from the buildings in areas toward the north and east. Areas JJ, KK, and OO, however, none of which are adjacent to existing buildings, yielded more than all but one of the other areas in this vicinity. This may be due to the former presence thereabouts of a temporary barracks (1907-1910) and a greenhouse (1910-1934), but the greatest concentration of window glass was in the northwest corner of area KK, approximately 60 feet east of the greenhouse's location. There was otherwise no apparent evidence of the former structures.

While fragments of bottles, window glass, and structural ceramics (tiles, blocks, etc.) account for most of the larger quantities of artifacts in the areas north and northeast of the main building, several more diagnostic artifacts were also found: 2 fragments of a small shell button (?), having no holes or shank (area Z); a plain, 2 piece, shanked, cuprous alloy button backmarked "Scovill Mf'g Co" (post-1850; area DD); a small, 2 holed, shell button (area FF); a small, 4 holed, glass button fragment (area DD); a small glass bead and a plastic comb fragment (area OO); a clinical thermometer fragment (area II); a 1946 U.S. one cent piece (area GG); and terra-cotta flower pot fragments (areas DD, II, and KK).

A block of concrete 2.5 feet across was located 0.2 feet below grade in a test pit at the south edge of area Z, approximately 40 feet north and 74 feet west of the main building's northeast corner. The skewed orientation of this feature and its location suggest that it served as an anchor for one leg of a swing set which is depicted in that vicinity on plans of the island dating to 1916 (NPS-DSC Dwg. No. 356/43,967:7) and to 1935 (figure 21). A large, sheet iron box or cabinet, possibly duct work, was located below grade in a test pit in the northwest corner of area KK, where a concentration of window glass and tile fragments was also found. A fire hydrant (c. 1952) was located at the east edge of area FF approximately 101 feet north and 48 feet west of the main building's northeast corner. A baseball backstop was present in the southwest part of area DD, and sideline fencing extended more than 100 feet north and east from this location. Concrete filled postholes were evident along the former fence line between the main building and the northeast corner of the island. A few naturalized apple or crabapple trees were present along the same fence line. A large stockpile of granite blocks, for repair of the seawall, was located towards the east side of area II, near where the greenhouse was formerly located. A road having a compact gravelly surface curves through this part of the island, running from north of the B and D building towards the east end of the main building. The soils north and northeast of the main building were like those to its south and east.

The areas along the island's north seawall (QQ through TT) are in part occupied by the same road, which extends to the docks at the north corner of the island. Except for a narrow strip adjacent to the B and

D building, (along which deteriorated benches were located), the surface in these areas is severely eroded, and possesses virtually no topsoil. Artifacts were nonetheless as frequent in these areas as in others and were more often found on the surface rather than shallowly buried. The artifacts were again predominately construction related and non-diagnostic. Among the notable artifacts were: 8 fragments of black transfer printed ironstone cups and plates, with the distinctive pattern produced for the Ellis Island restaurant concessionaire by the Scammel China Co. of Trenton, New Jersey (areas QQ, RR, and SS); 1 other decorated ironstone fragment (possibly a U.S. Coast Guard commissary variety; area SS); a plastic "Clorox" bottle cap (area RR); a cuprous alloy machine screw, having a knurled knob head, and part of the sleeve into which it screwed (window latch hardware?; area SS); and a gray chert flake (area SS) and core (area TT). The chert flake and core are probably prehistoric artifacts, but their origin cannot be determined.

The areas between the powerhouse and the seawall at the west end of the island were only slightly less eroded than those along the north side. Testing in these areas was by means of trowel excavation, rather than shovel test pitting, or simply by collection of surface artifacts where they were particularly abundant. The greatest concentration of artifacts on the entire island was located southwest of the incinerator in area YY, where partially incinerated debris -- consisting of ceramics, bottle fragments, cans, window glass, tile, brick, mortar, hardware, and various other items -- filled eroded depressions in the island's surface. Some of this debris was covered by recently deposited piles of dead leaves. The surface in these areas generally was otherwise similar to that along the north seawall, although not quite as severely eroded. Sand, presumably recent fill, comprised the surface in the vicinity of the island's northwest corner. The characteristics of a relatively large collection of ceramic fragments from area YY are given in table 3. Among the other diagnostic artifacts from these areas are: a milk glass plate rim fragment, scalloped and gold painted (area XX); a cuprous alloy, silver alloy plated serving spoon, 8 inches long (area XX); two tumbler fragments, one plastic and one glass (area YY); a glass coffee percolator top, marked "Even Spray" (area YY); a brown glass bottle base, marked "Log Cabin" (area YY); one "Coca-Cola" bottle and two Coke bottle fragments (area YY); a clear glass bottle base, and "Hershey" (area YY); a metal jacketed eraser from a wooden pencil (area XX); and a key marked "Bay State" (area XX). There was, in addition, an abundance and variety of other bottle and jar fragments, structural materials, hardware, and bone. A number of terra-cotta flower pot fragments were noted, but not collected, in the vicinity of the greenhouse in areas XX and YY.

The archeological survey of Island 3 resulted in discovery and collection of numerous artifacts, most of which, however, provide little basis for interpretation concerning the activities of the immigration station. This is in large part due to the non-diagnostic nature of the majority of the items collected — their relative lack of distinctive stylistic and technical characteristics — and to the evident pervasiveness of the major activities reflected: construction; structural maintenance, modification, and deterioration; and debris disposal. Interpretation of immigration station activities on the

[illegible]

Variety of ware	Vessel Type	Size	No. of Fragments	Marking	Date	Reference	Comments
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]				[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

basis of the artifacts at the surface of the island is further complicated by the presence of exogenous artifacts, which are likely to have come to the island together with the soil used as top dressing. Among the objects likely to have such an origin are fragments of nineteenth century ceramics (including many of the decorated and undecorated white earthenwares), some of the bottle and window glass fragments, some of the nails and nail fragments, the clay pipe fragments, and the Cal .22 cartridge casings. The prehistoric lithics discovered may also be exogenous, and are clearly out of context.

Nonetheless, besides the structural materials and hardware, which occur in all areas of the island, objects which probably or certainly derive from activities on the island tend to support certain aspects of the historical record. The occurrence, or greater frequency, of objects such as coins, buttons, the comb fragment, and the bead east and north of the main building, fits with that area's known historical use as a recreation area. The rarity of non-exogenous, non-structural material along the ferry basin at the south side of the island reflects the formality of that area's historical use. The higher density generally of debris, and especially of institutional ceramics and of bottles, jars, and cans, at the west end of the island, serves to confirm historically documented debris disposal patterns.

Findings -- Islands 2 and 3

The survey of Islands 2 and 3 (figures 34 and 35), was conducted by means of shovel test pits along the north side of Island 2 and by trowel testing in other locations. In all, 207 locations were examined, and 486 artifacts, predominately construction related, were collected. Tested locations on Islands 2 and 3, as on Island 1, are

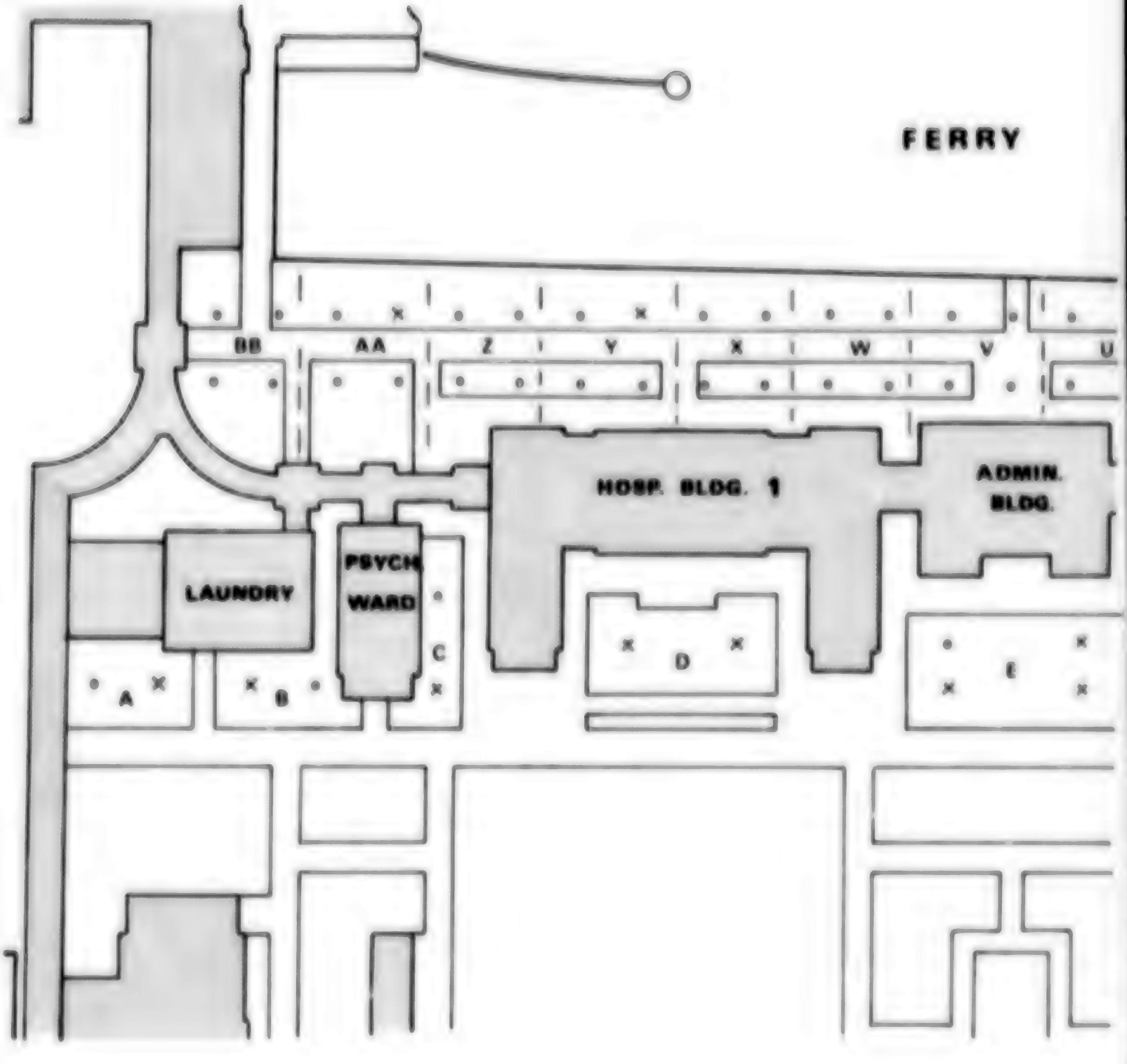
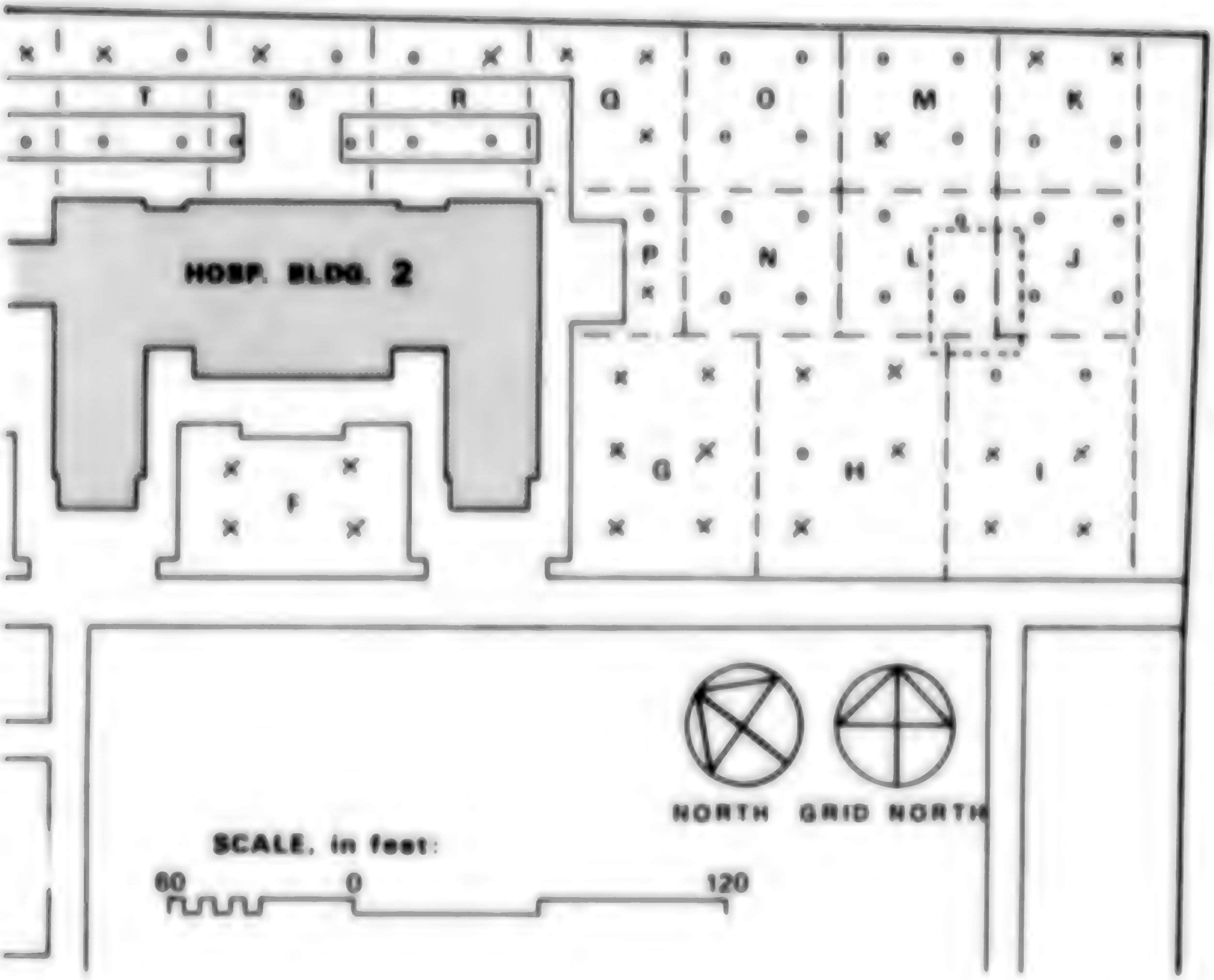


FIGURE 34. PLAN OF ARCHEOLOGICAL SURVEY ISLAND 2 - ELLIS ISLAND

154

BASIN



KEY:

A, B, b – survey areas

o – non-sterile tests

✕ – sterile tests

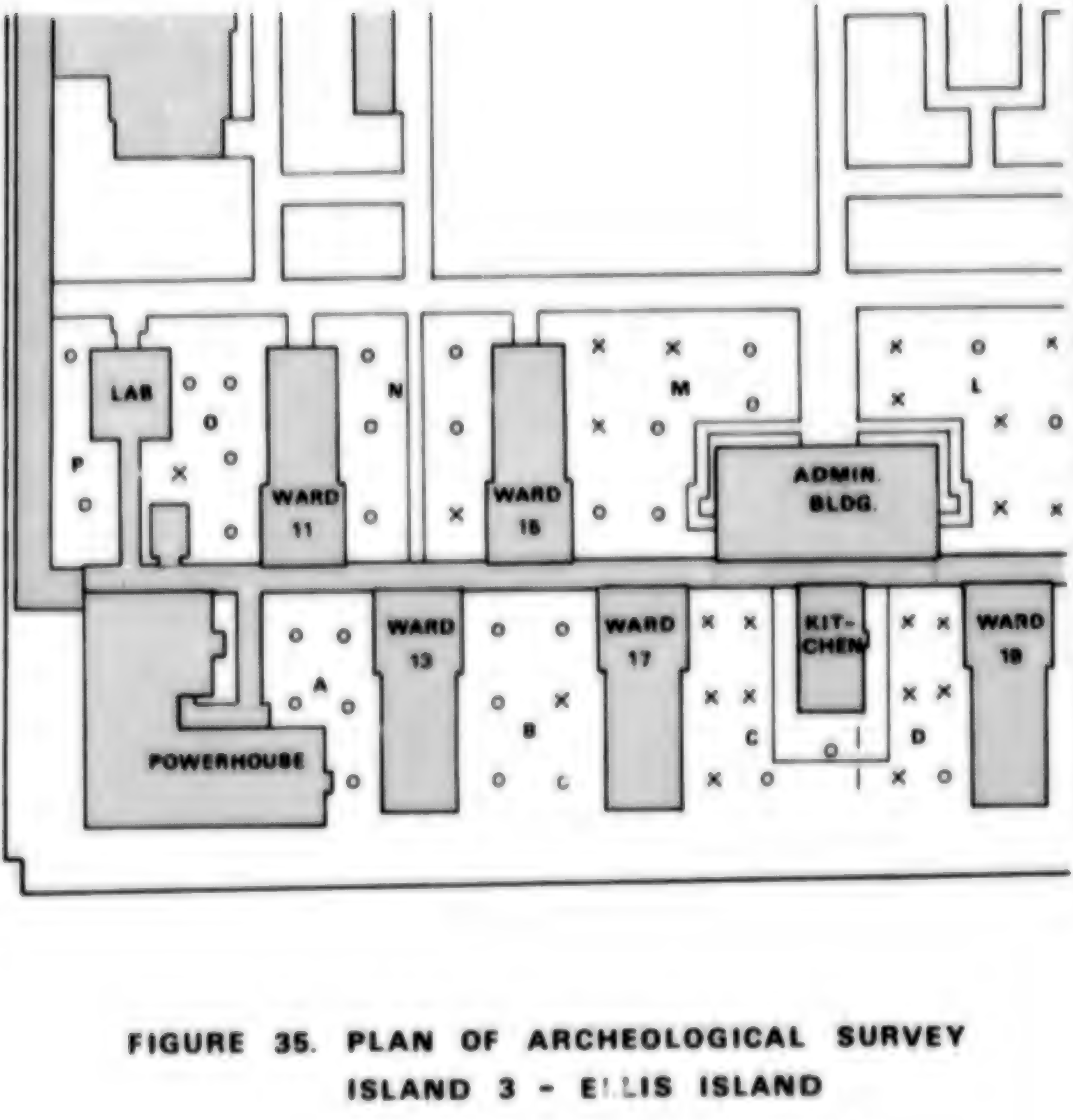
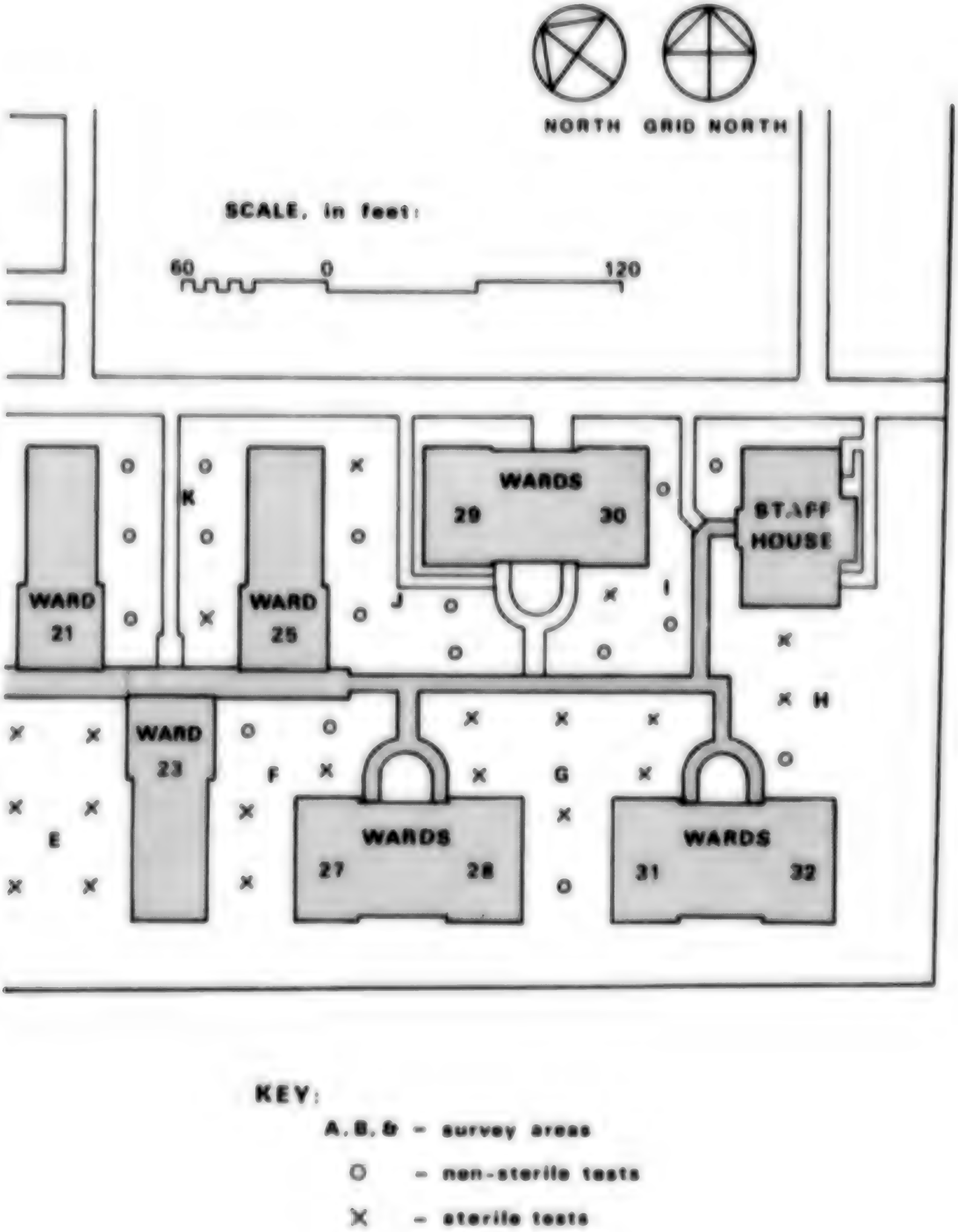


FIGURE 35. PLAN OF ARCHEOLOGICAL SURVEY ISLAND 3 - ELLIS ISLAND


NORTH
GRID NORTH
SCALE, in feet:
60
0
120
WARD 21
WARD 25
WARDS 29 30
STAFF HOUSE
WARD 23
WARDS 27 28
WARDS 31 32
K
J
I
H
G
F
E
KEY:
A, B, & - survey areas
O - non-sterile tests
X - sterile tests

grouped and the groups designated with letters to facilitate discussion. Among the artifacts, the characteristics and provenience of which are summarized in tables 4 and 5, there were again a number of ceramic fragments and other objects likely to have originated someplace other than Ellis Island, together with objects of local derivation. Figure 36 illustrates some of the artifacts from Islands 2 and 3.

The surface soils of Islands 2 and 3 were generally similar to those of Island 1. Rubble, however, appeared to be less common within the brown gravelly loam subsoil, and both it and the dark grayish brown topsoil were slightly more sandy. Erosion of the topsoil from rainwater run-off was common adjacent to the buildings. Erosion from the action of waves, together with ground disturbances and filling associated with seawall repairs, had thoroughly disrupted the soils at the harbor-side margins of the islands.

Areas A through C at the west end of the south side of Island 2 yielded very small amounts of artifacts, although the ground surface in these areas was littered with structural materials from nearby buildings (window glass, roofing tile, ornamental copper, pieces of wood, bricks, mortar, etc.). A large, sheet iron ventilator stack, fallen from the roof of the laundry building to the north, was located in area A. A frame, garage-like structure and piles of sand and gravel were located on a pavement at the north end of the open space between the psychiatric ward and hospital building 1 (area C). The only notable artifact from these areas is a bulbous leaf trap (?), for use in a gutter, made of copper wires (area B).

Structural debris was also common at the surface of areas D, E, and F, but only one artifact -- a small, lead disc seal molded onto wire (area E) -- was collected. A cast concrete birdbath, with a basin about 3 feet across and 4 feet high on an hexagonal pedestal, was located in the center of area D approximately 35 feet south of hospital building 1. There was no apparent evidence at the surface of a sump and pump house which had been situated, between 1901 and 1930, where the birdbath was located.

A ventilation blower and sheet metal ducts were present in the southeast part of area E, and two open sheds were located at the southeast corner of the east wing of hospital building 2, at the north margin of area F. One of the sheds contained galvanized garbage cans marked "U.S.N." The ventilation equipment and sheds are likely to derive from the modifications (specifically, the establishment of a galley and mess hall) made by the U.S. Coast Guard on Island 2 in 1951 (Unrau 1984:1261-1262).

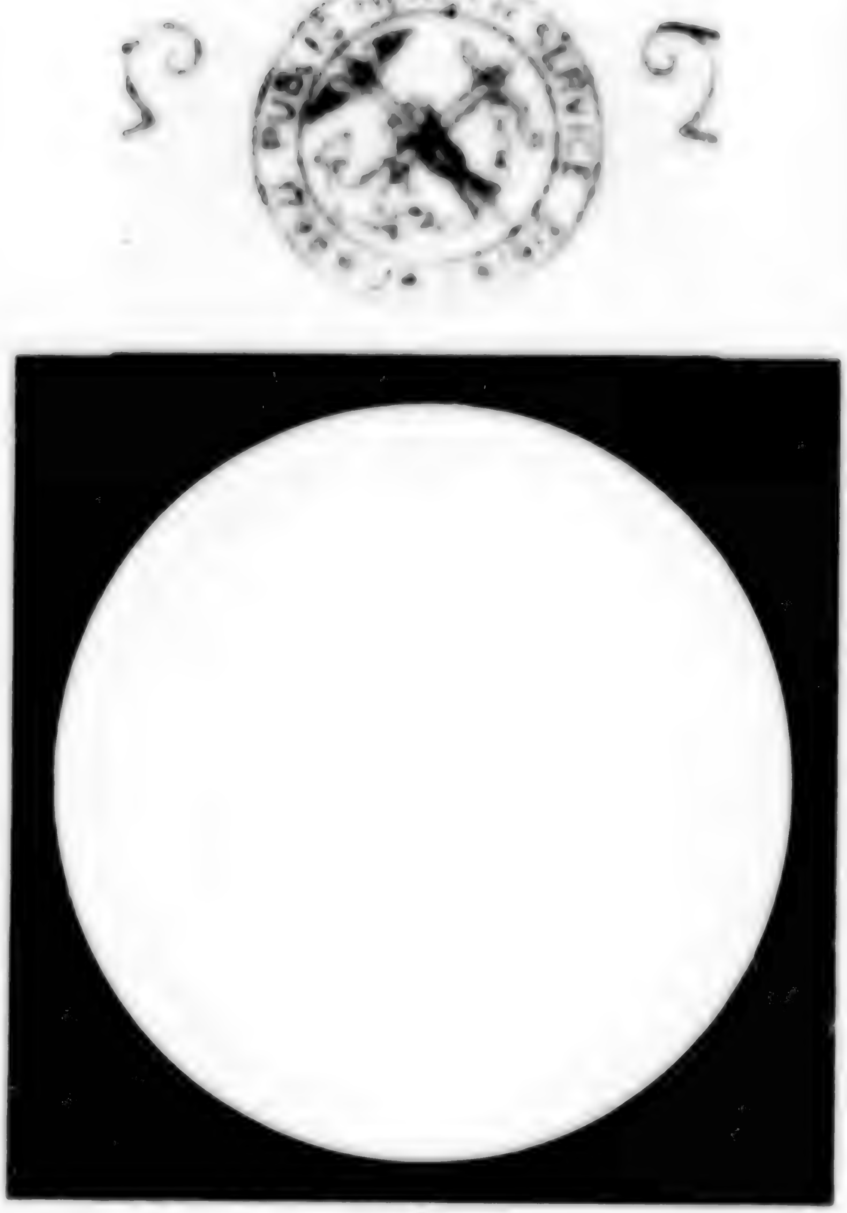
In areas G through I, toward the southeast corner of Island 2, the quantities of structural debris declined due to the increasing distance from existing buildings. Only three artifacts were collected in these areas: a possible light bulb fragment (area H), an olive green bottle fragment, and an enameled iron dish fragment (area I). These areas were densely vegetated, and one location in area I could not be tested due to the prevalence there of poison ivy. The tennis court which, prior to c. 1930, had been located in areas G and H, was not evident. Along the seawall east of area I, where testing was not done due to severe erosion, the tops of 3, upright, 1.0 foot square timbers, likely to derive from the former cribwork bulkhead, were located about 5 feet apart, aligned north-south, 2 feet west of the existing granite seawall.

TABLE 4. SUMMARY OF ARTIFACT PROVENIENCE, ARCHEOLOGICAL SURVEY OF ISLAND 2 / ELLIS ISLAND.

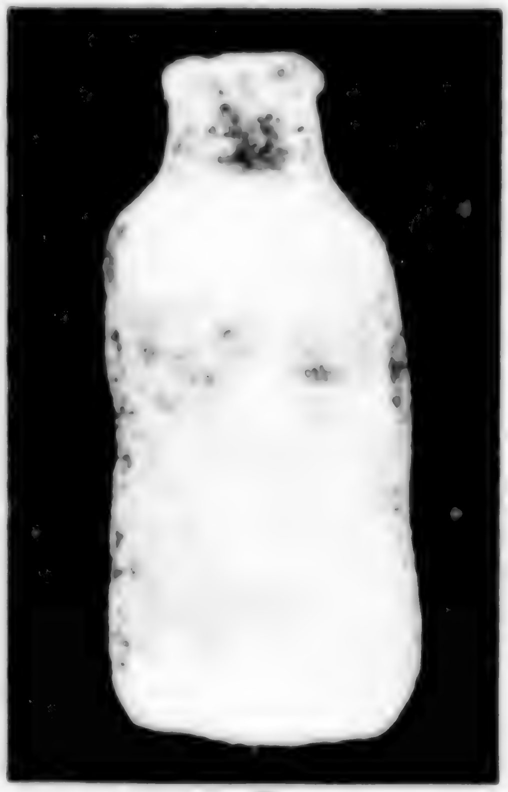
Artifact Varieties	Provenience (Areas): A	B	C	E	H	I	J	K	L	M	N	O	P	R	S	T	U	V	W	X	Y	Z	AA	BB	Total
Food Service Ceramics																									
Decorated Ironstone	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	2	-	-	-	-	-	-	-	-	3
Undecorated Ironstone	-	-	-	-	-	-	1	2	-	-	-	1	-	4	-	2	2	-	1	2	-	-	-	-	15
Decorated Whiteware	-	-	-	-	-	-	1	-	1	-	3	1	-	2	2	-	-	-	2	-	1	-	-	-	13
Undecorated Whiteware	-	-	-	-	-	-	-	-	-	1	1	-	-	3	-	-	1	-	-	-	-	1	-	-	7
Other	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	2	-	1	1	1	4	-	11
Bottles and Bottle Frags.	-	-	-	-	-	1	3	1	1	1	3	2	-	-	4	-	4	3	4	7	2	2	-	3	41
Window Glass Frags.	3	-	-	-	-	-	1	1	3	1	1	2	-	3	2	8	5	9	4	9	3	2	-	2	59
Structural Ceramic and Mortar Frags.	-	-	1	-	-	-	-	1	3	-	3	2	-	-	1	6	1	4	1	2	-	1	-	-	26
Other Structural Materials	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	1	-	5	-	-	-	1	9
Nails and Spikes	-	-	-	-	-	-	-	-	7	1	3	-	1	-	-	-	1	1	1	3	1	-	1	2	22
Miscellaneous Hardware	-	-	-	-	-	-	1	-	2	-	1	-	-	-	-	1	1	-	1	-	-	-	-	1	8
Light Bulb and Fixture Frags.	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	2
Misc. Materials/Unidentified																									
Ferrous	-	-	4	-	-	-	-	-	1	-	-	-	-	-	-	1	4	-	1	4	1	2	2	-	20
Cuprous	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1
Other Metal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	-	-	-	-	-	4
Glass	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-	1	-	-	3	1	-	-	-	7
Plastic	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	4	5
Bone	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	2
Other:																									
Enamelled Iron Dish Frag.	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Glass Tumbler Frag.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1
Seal	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Iron Handle Frag.	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1
Glass Table Top Frag. (?)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
Electrical Switch Plate Frags.	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	2
Leaf Guard (?)	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Spark Plug	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Terra Cotta Pot Frags.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	3
Various Plastic Objects	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	2	2	9
Coal and Slag	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Total	3	1	6	1	1	2	13	6	19	6	15	9	2	16	10	21	24	22	17	38	10	9	12	15	278

TABLE 5. SUMMARY OF ARTIFACT PROVENIENCE, ARCHEOLOGICAL SURVEY OF ISLAND 3 / ELLIS ISLAND.

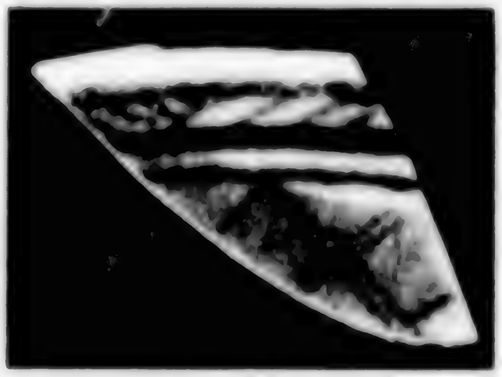
	Provenience (Areas):															
Artifact Varieties	A	B	C	D	F	G	H	I	J	K	L	M	N	O	P	Total
Food Service Ceramics																
Decorated Ironstone	-	-	-	-	-	-	1	-	-	-	3	-	-	-	-	4
Undecorated Ironstone	1	-	-	-	-	-	-	-	1	1	1	-	4	3	-	11
Decorated Whiteware	-	-	-	-	-	-	-	-	-	1	1	1	1	2	-	6
Undecorated Whiteware	-	-	-	-	1	-	-	-	1	-	-	-	-	1	1	4
Other	3	-	-	-	-	-	-	-	-	-	2	1	1	-	1	8
Bottles and Bottle Frags.	10	-	1	-	-	-	-	1	1	-	12	4	2	4	1	36
Window Glass Frags.	17	7	-	1	3	-	-	5	3	3	1	4	8	-	1	53
Structural Ceramic and Mortar Frags.	3	1	-	-	-	-	-	1	-	1	1	2	4	1	1	15
Other Structural Materials	-	-	-	-	-	-	-	-	4	-	1	-	1	2	4	12
Nails and Spikes	5	4	-	-	1	-	-	-	1	-	-	-	-	2	-	13
Miscellaneous Hardware	-	1	-	-	-	-	-	1	-	-	-	-	1	2	-	5
Light Bulb and Fixture Frags.	3	-	2	-	4	-	-	-	-	-	4	-	-	-	4	17
Misc. Materials/Unidentified																
Ferrous	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	3
Glass	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Bone	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	2
Other																
Plastic Comb Frag.	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1
Graphite Marker	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1
Medicine Bottles and Frags.	1	-	-	-	-	-	-	-	-	-	3	-	-	-	-	4
Medicine Container Seal	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
Glass Bottle Stopper	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1
Lab Bottle Stopper (rubber)	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
Glass Ashtray Frag.	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1
Ferrule	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1
Electrical Tube Socket	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Coal	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Shell	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	4
Total	45	18	4	1	9	1	1	9	12	9	30	13	24	19	13	208



A



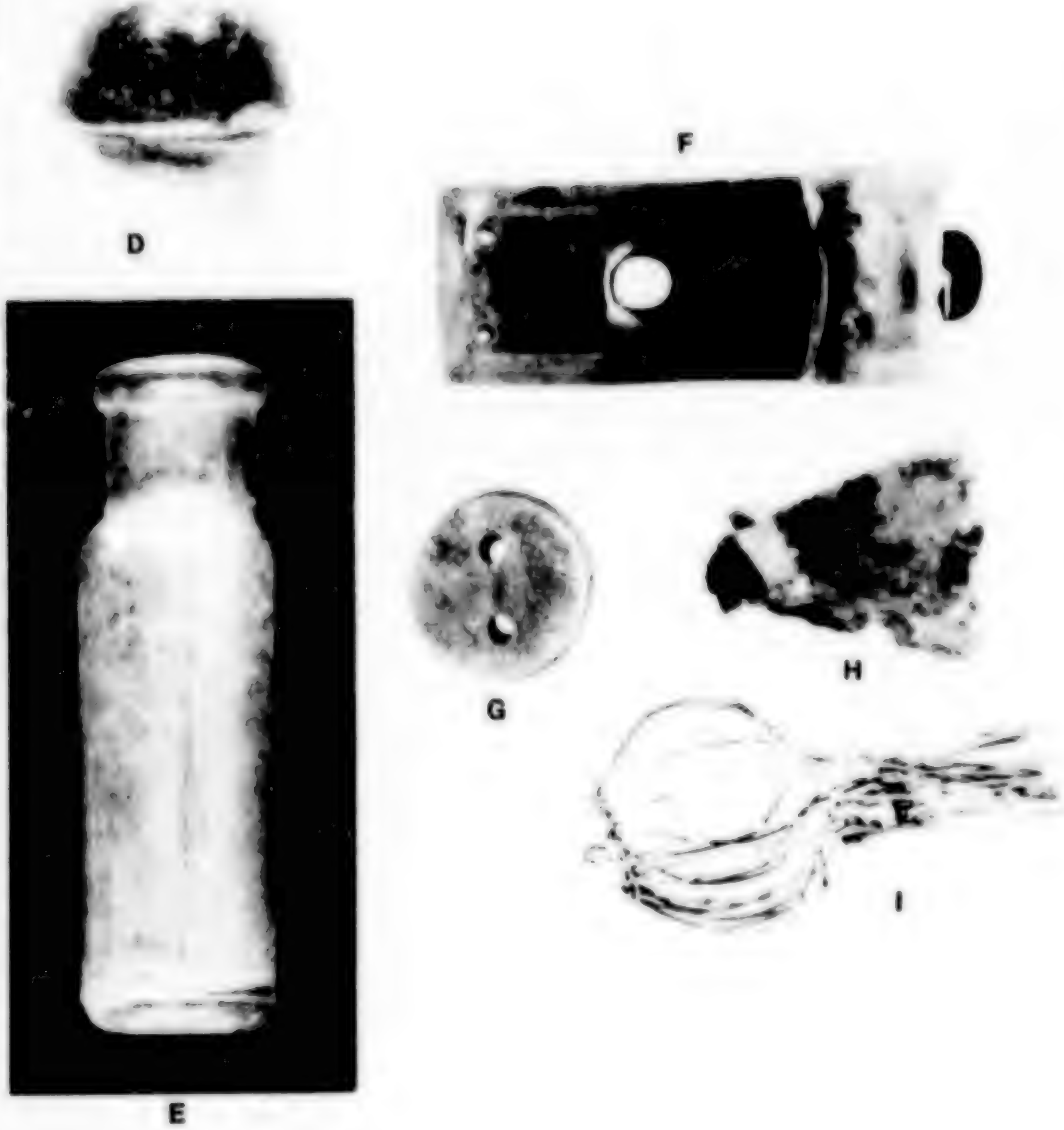
B



C

FIGURE 36. ARTIFACTS, ISLANDS 2 & 3 SURVEY:

A) ironstone plate with U.S. Public Health Service emblem, from island 3, area H, B) melted medicine bottle, island 3, area L, C) blue underglaze painted, Chinese export porcelain dish fragment, island 2, area R.



D) salt-glazed stoneware jug mouth fragment, island 3, area A, E) medicine bottle, island 3, area A, F) door lock (Yale) and plate, cuprous alloy, island 3, area B, G) rubber laboratory bottle stopper, island 3, area J, H) electrical switch fragment, slate and cuprous alloy, island 2, area B, I) cuprous alloy leaf trap (?), island 2, area B.

(D at actual size. A, F, G, H, & I at 1/2 X actual size. B, C, & E at 2 X actual size.)

Shovel test pitting in areas J through Q, toward the northeast corner of Island 2, resulted in discovery and collection of larger quantities of artifacts in nearly all areas. Artifacts were especially frequent in areas J, L, and N. In area J, objects such as a chipboard disc, a plastic cosmetic brush, 2 plastic tube fragments, and a plastic bottle cap fragment may have been carried onto the island from the harbor by the action of waves. A "Champion" spark-plug was also located in area J. Remnants of the former Surgeon's House (1901-1930) were located in area L. Brick and mortar rubble was encountered in the southeast of that area, where the structure's basement was located, and a cut stone footing was discovered about 0.5 foot below grade in the northeast of the area, approximately 135 feet east and 8 feet south of the northeast corner of hospital building 2. The footing is likely to be that of the southwest corner of the house's north porch (see figure 20, above). Several nails and nail fragments, including at least 3 machine-cut nails, were located in areas L and N. Among the other notable artifacts from areas J through Q are: several blue transfer printed whiteware fragments (areas L, J, N, and O); a counter-weighted sash window pulley (area L); a railroad spike (area M); a milk glass light fixture fragment (area O); and a bone handle (?) fragment (area K). A concrete slab, 12.75 feet square, was located in area N 94 feet east of hospital building 2, centered on its east entrance. This slab, elevated slightly above grade, is likely to have served as the base of a large cross located there c. 1950.

The surface soil at the northeast corner of Island 2 consisted of sand. The soils at the surface of the island were otherwise similar to those on Island 1. However, along the north margin of the island, cinders which may derive from the original walkways (c. 1902-1920?) were located at depths of 0.6 to 1.4 feet below grade.

Relatively large quantities of artifacts continued to be found, through shovel test pitting, in areas R through Y north of the major hospital buildings. Fragments of decorated ceramics were the most numerous diagnostic artifacts in these areas: fragments of blue (areas R and W), green (area R), and brown (area S) transfer printed whitewares; a fragment of red painted (?) whiteware (area Y); a fragment of blue painted Chinese export porcelain (area R); an overglaze enameled porcelain fragment (area V); an ironstone dish rim fragment with green and red painted stripes (area T); and 2 fragments of the Ellis Island concessionaire variety of black transfer printed ironstone (areas R and T). Fragments of stoneware were located in areas V and X. Except for the decorated (and undecorated) ironstone fragments, these ceramics are likely to be exogenous. Two fragments of a slate mounting plate for a knife variety of electrical switch were located in area R, and a fragment of thick, flat glass, possibly a table top, was found in area V. A glass tumbler fragment was recovered in area Y. Disturbed soils and recent sand fill were encountered in areas U and V directly north of the entrance to the administration building.

Few of the artifacts recovered in areas Z through BB, at the west end of the ferry basin on Island 2, were diagnostic. Glazed redware vessel fragments were located in areas Z and AA. Terra cotta flower pot (?) fragments, a piece of plastic flagging, and a plastic salt shaker cap fragment were also found in area AA. Shrubs within the planting bed at the south edge of area BB appear to have trapped wind-blown leaves and debris, which probably accounts for the recovery from that area of several plastic items, including a small nasal spray bottle.

A concrete pavement, approximately 5 feet wide by 80 feet long, was located adjacent to the seawall at the west end of the ferry basin. The former presence, in the mid- to late-1930s, of fender pilings along this section of the seawall suggests that the pavement was intended to facilitate docking related activities.

A large quantity of artifacts were found in area A at the west end of Island 3, northeast of the powerhouse, morgue, and quarters building. Steps, and a deteriorated wooden ramp, provided access to the area from the corridor at its west edge, and most of the artifacts were located near those steps. In addition to structural materials, which littered the area, several bottle fragments and one complete, small pill bottle were found. Also recovered were fragments of a gray, saltglazed stoneware jug and of glass light fixtures. Bones and a plastic toothbrush were noted in the area.

Area B, on the south side of Island 3 between wards 13 and 17, yielded a moderate amount of artifacts. The only diagnostic object was a cuprous alloy, "Yale," door lock tumbler and plate, which had evidently been pried from a door (for its value as scrap metal?) and then lost or discarded. In addition to structural debris and some deteriorated wooden chairs, a wooden basketball standard was located, attached to the east wall of ward 13, and the "ghost" (an outline in paint) of the post for a matching standard was present on the west wall of ward 17, where there was also an equipment box. Iron pole standards, for a net, set in concrete-filled cans, were also found in the area, which from c. 1939 to 1950 had served as an exercise yard for hospitalized detainees. Remnants of high chain link fencing topped by barbed wire were present at the south end of the area. At the time of the survey, the area was densely vegetated, having, among other trees and shrubs, a naturalized peach tree.

Surprisingly few artifacts were found in areas C and D, on either side of the kitchen, although structural debris was again common. The only notable artifact collected was a small, thin, cuprous alloy disk which was probably the protective seal on a rubber-stopped drug bottle. An engine piston was noted at the ground surface in the northeast part of area C. A concrete pavement was present at the south end of the kitchen, where an addition to the building was formerly located. On this pavement, southwest of the kitchen, was a stack of terra cotta construction blocks. A large concrete ramp which extended up to the corridor was located in the northwest part of area D.

No artifacts were collected in area E, but an "Anchor Hocking" glass tumbler was noted at the area's west edge, and a glass electrical insulator at its east edge. Structural debris was also noted in the area. Among the few artifacts collected in area F, the only non-structural object was an undecorated whiteware fragment. Additional fragments of ceramics, and of bottles, were also noted in the area, along the driplines adjacent to the buildings.

Much of area G, north of wards 28 and 31, was covered by a thin, uneven, asphalt pavement, reflecting the presence there of a tennis court after c. 1939. Structural debris was noted in the area, but the only artifact collected was a ground glass stopper, presumably for some type of clinical bottle.

A collapsed greenhouse was located attached to the south wall of ward 32, near the southeast corner of the island. Its location was outside of the surveyed areas, but an abundance of structural materials, especially wood and window glass, and a large number of whole and broken terra cotta pots were noted in the vicinity.

In area H, between ward 32 and the staff house at the east end of the island, again only one artifact was collected. A complete ironstone dish, 7.5 inches in diameter, with the emblem of the U.S. Public Health Service (and marked "Made Expressly/for/USPHS/by/Albert Pick and Co./Chicago/Buffalo China"; c. 1915-1940; Lehner 1980:33, 120) was located slightly southwest of the center of the area, towards the steps at the end of the corridor. A bird bath, with a basin approximately 2 feet in diameter, was also found in area H, about 28 feet south of the staff house. Flowers (tulips) were observed growing adjacent to the staff house, which had a low chain link fence along its east and north sides. In area I west of the staff house, a small, low roofed shed (for gardening tools ?) was found adjacent to the corridor. A pitch fork was noted nearby. A small, tubular, cuprous alloy ferrule with illegible lettering at one end, collected alongside the staff house, was the only diagnostic artifact from the area.

The south part of area J was separated from area I by an elevated masonry walkway situated over a tunnel for utilities. The diagnostic artifacts from area J were: a whole institutional porcelain bowl, 5.5 inches in diameter, marked "Walker China/Vitrified/Bedford, Ohio/A-49" (post-1927, Lehner 1980:157); an olive green bottle base fragment marked "_?_d COKA M_?_"; and a 3 inch diameter rubber stopper, with 2 holes, for laboratory or clinical use. A cuprous alloy floor lamp was noted along the corridor at the south edge of the area.

In area K between wards 21 and 25, a green, floral painted whiteware fragment was the only diagnostic artifact collected. Structural debris, as always, and an enameled metal basin were also noted in the area.

A large quantity of artifacts were collected in area L, and a moderate quantity in area M, in the vicinity of the administration building on Island 3. Nearly all of the artifacts from area L were located in a small deposit of partially burnt debris situated adjacent to the west wall of ward 21. Notable objects collected there were: 2 ironstone dish rim fragments having green and red bands, and 1 having thin green stripes; an institutional porcelain dish rim fragment having thin green stripes; an undecorated parian porcelain bowl fragment (possibly a laboratory ware); a small, melted pill bottle and 2 pill bottle fragments; several clear, green, brown, and blue glass bottle and jar fragments, some of them melted; and a dark purple glass ashtray fragment. A fragment of ornamental structural copper was also collected in the area, and a "Hoover" vacuum cleaner (model no. 752) was observed, but not collected.

The notable artifacts found in area M were: a brown transfer printed whiteware fragment; a clear glass bottle fragment marked "_?_LEAT_?_/__?_ROBT_?_/_?_PHILA_?_"; and an arc lamp carbon rod tip, 0.5 inches in diameter. Also located in area M were a collapsed wood and iron bench, situated at the west side of the walkway to the administration building entrance, and a small (roughly 3 feet in diameter) planter (?), formed with hardware cloth supported by 4 iron posts, filled with gravelly soil and loam. The latter feature was located approximately 30 feet west and 10 feet north of the administration building.

In area N, between wards 11 and 15, the diagnostic artifacts were a blue transfer printed (?) whiteware fragment, a cuprous alloy chain likely to be from a counter-weighted sash window, and a plastic comb. Paper and plastic cups, as well as structural debris, were noted in the area, as was a large feature. The feature consisted of a low (3 to 4 feet high), wide (approximately 8 feet across), wall-like pile of asphalt, cement, and brick, broken into large chunks and stacked on nearly the entire length of the north-south walkway through the center of the area. The origin of this feature is uncertain, although it presumably derives from some modification in the island's landscape.

In area O, 2 blue transfer printed whiteware fragments, a milk bottle rim fragment, a large hex nut for plumbing, a spool-shaped, porcelain, electrical insulator, and an electrical equipment (radio?) tube socket were collected. An institutional size jar, an engine piston, and bone were noted in the area, along with a moderate amount of structural debris. A large amount of structural debris, especially fragments of terra cotta roofing tiles and window glass, was observed on the eroded surface of area P, but only a small quantity was collected. A shovel was also noted in the area. Among the objects collected were milk glass light fixture fragments and an overglaze enameled, floral, porcelain fragment.

The archeological survey of Islands 2 and 3 revealed that, as on Island 1, most of the artifacts at and near the surface derive from construction, structural maintenance and modification, and, quite simply, the ongoing deterioration of structures. In addition, again as on island 1, many of the ceramic fragments found, and undoubtedly other artifacts as well, are very likely to originate somewhere other than

Ellis Island. The institutional ceramics collected, however, including 2 unbroken vessels, do derive from the facilities on the island. Furthermore, the whole and fragmentary pill bottles, the drug bottle seal, the ground glass bottle stopper, and the rubber laboratory bottle stopper all clearly reflect the existence of the U.S. Public Health Service hospital. Such diagnostic artifacts are nonetheless uncommon, and their deposition appears to be haphazard, rather than structured by routine activities.

Several features were also located on Islands 2 and 3, including landscape elements such as birdbaths and a bench. The most extensive buried feature located was the foundation (and basement fill) of the surgeon's house at the east end of Island 2. In addition to the features noted in the preceding discussion, a baseball backstop was observed, enveloped by vegetation, in the northwest corner of the former recreation area at the east end of the filled former basin between Islands 2 and 3. Inlets and cleanouts of buried utilities (drains and sewers) and fire hydrants dating to the original development and the 1952 improvements were also noted on Island 3.

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TEST EXCAVATIONS ON ISLAND 1

Objectives

During May and June, 1984, test excavations were made on Island 1 of Ellis Island. The purposes were to locate remnants of nineteenth century structures, and to provide a basis for assessing their extent and archeological integrity, together with the significance of associated features and strata. Specifically, the southeast corner of the first immigration station's main building (1891-1897) was to be exposed in an excavation southeast of the existing main building. A short distance north of the existing main building, excavation was intended to reveal portions of footings for a wing of Fort Gibson's barracks (constructed c. 1812) and its hotshot furnace (constructed c. 1842). (See figure 37.)

Discovery of these structural remnants would help confirm the accuracy of historical plans, and of overlays with modern plans. If, as in fact happened, they were not found, then other features, or additional testing, were expected to contribute to refining the accuracy of the overlays. In practical terms, what was sought was an improved basis for assessing the potential effects of restoration related ground disturbances on archeological resources.

Once excavation began, the focus was necessarily on the features actually encountered. As time permitted, and in large part simply to clarify what had been found, a total of five excavation units were dug, three north and two southeast of the main building.

Methods

Standard methods of controlled archeological excavation were employed during testing on Ellis Island, except that soils from the

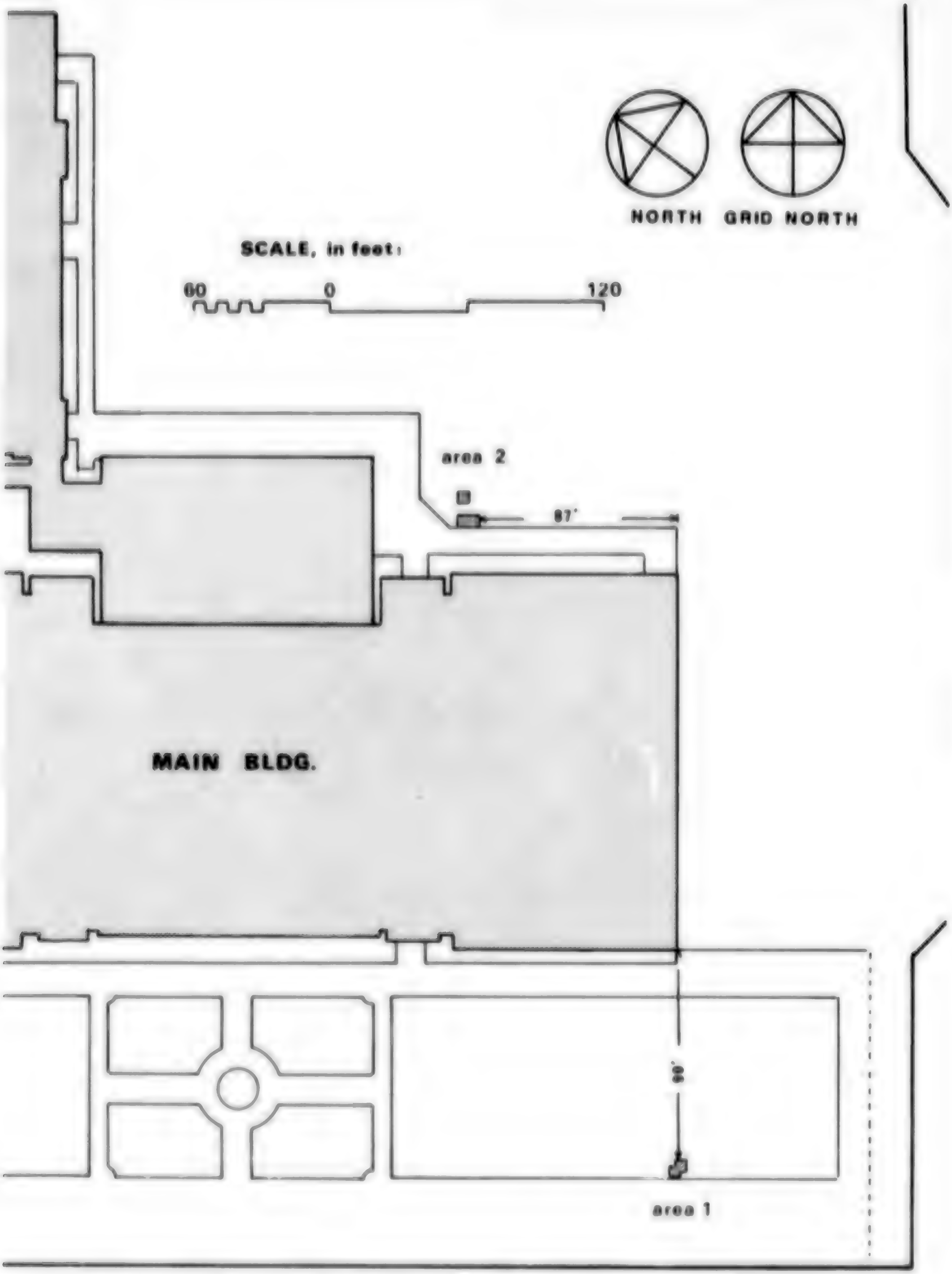

FIGURE 37. LOCATIONS OF ARCHEOLOGICAL TEST EXCAVATIONS
ISLAND 1 – ELLIS ISLAND

final two units dug were not screened to recover artifacts. The excavation units were located using the existing main building's corners as bench marks, and were aligned on the same axes as the building. The units measured 5 feet square, but quadrants of two of the units overlapped. Trowels were used in the initial excavation of most soils, while shovels were used to cut and remove sod and to throw soil to the screen. Where a stratum clearly consisted of a thick body of fill, troweling was occasionally dispensed with. Distinct soil strata and features were excavated separately, and this separation was observed in maintaining a record of the provenience of artifacts. Features and strata were documented by photographs and drawings, as well as by a narrative record.

In order to complete the final two excavation units within the time allotted for field work, certain standard methods of excavation were not used. The surface stratum had been adequately sampled by shovel test pitting as well as by the initial excavation units, so it was shoveled out of the last two units and no artifacts collected. Artifacts were collected from lower strata as they appeared during troweling and shoveling, but the excavated soils were not screened.

Area 1 Findings: Stratigraphy and Features

Units 1 and 4 were located between 90 and 97.5 feet directly south of the main building's southeast corner. They were excavated within an area composed entirely of fill soils deposited between 1890 and 1903. The location was chosen because it was expected to have been the position of the southeast corner of the first immigration station's main building. However, the stratigraphy and features encountered (figures 38 and 39), while generally consistent with the island's known

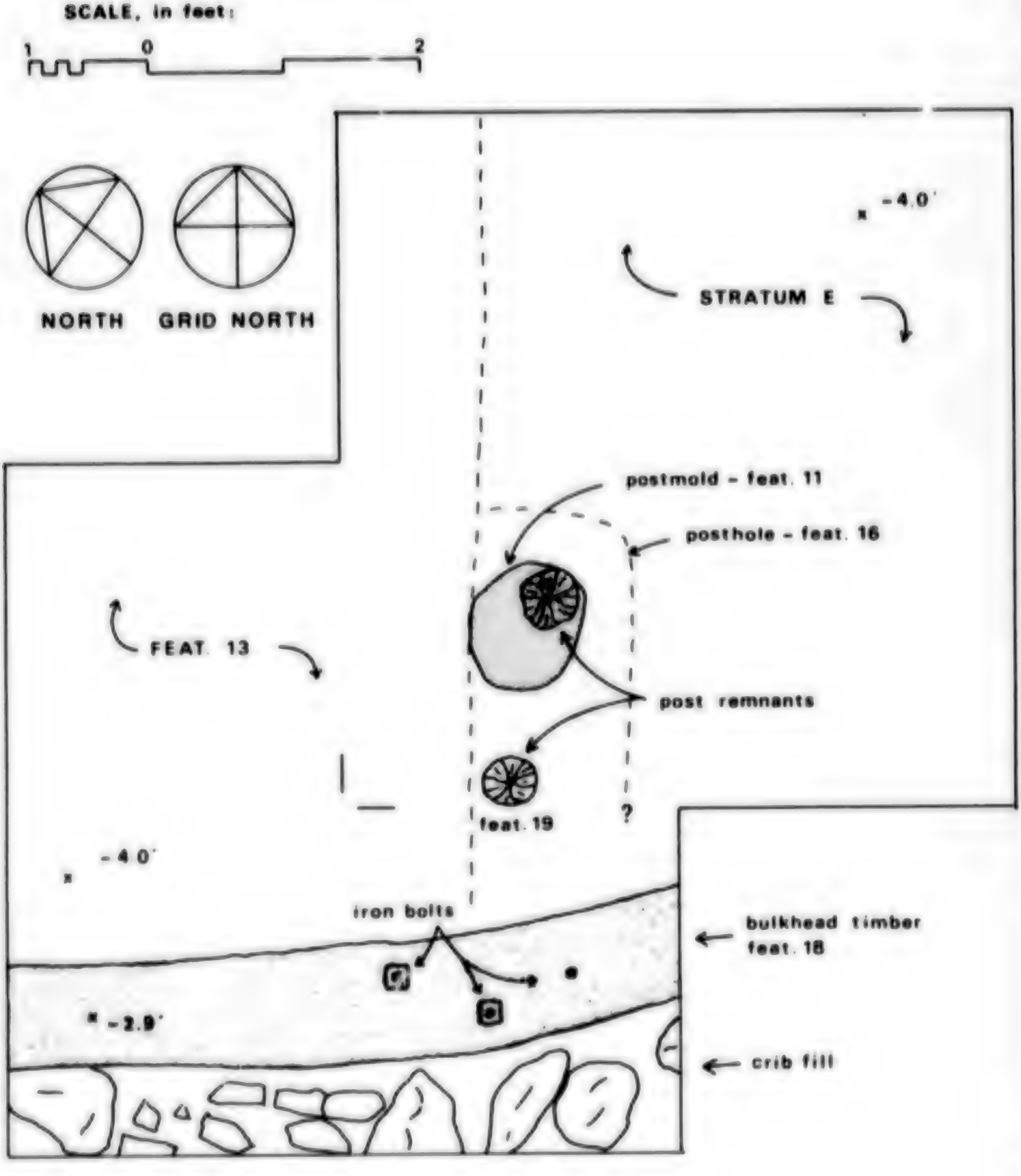

FIGURE 38. PLAN OF EXCAVATIONS
AREA 1 - ELLIS ISLAND

x -4.0' = depth below grade

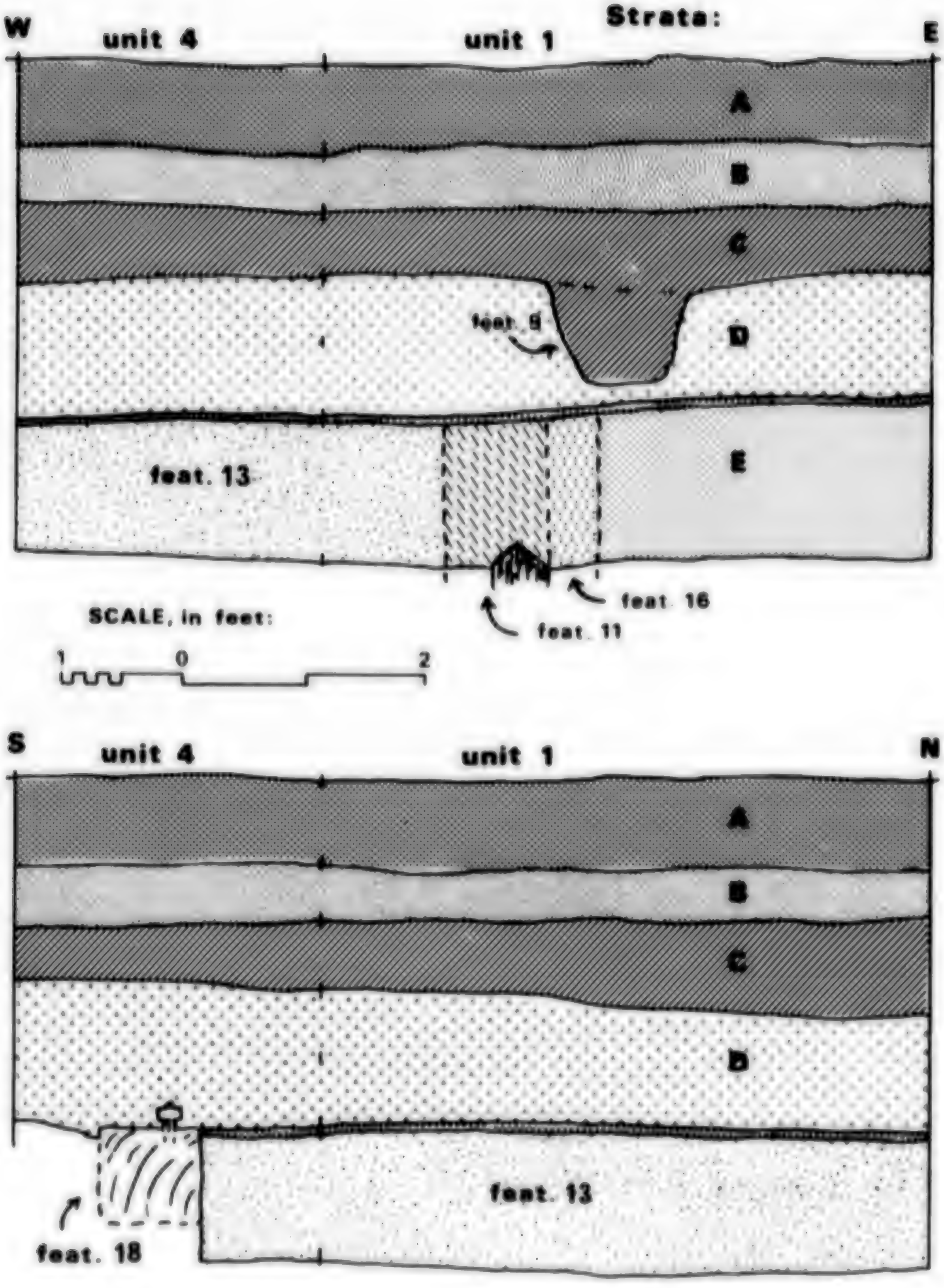

FIGURE 39. SCHEMATIC CROSS-SECTIONS
AREA 1 - ELLIS ISLAND

recent history, did not include remnants of the former structural corner.

The uppermost soil layer, stratum A, consisted of 0.6 to 0.8 foot of dark brown loam. This soil is presumably topdressing deposited in 1903 when the grounds of the second immigration station were initially landscaped. The elevation of the surface of A was approximately 8 feet A.M.S.L. Stratum B, immediately below A, consisted of 0.3 to 0.6 foot of light reddish brown sandy loam. It contained an abundance of building debris (brick fragments, mortar, stone fragments, etc.) and very oxidized iron fragments and objects. Stratum B was deepest in the central and north-central portions of unit 1, where its base graded into Stratum C, a dark grayish brown loam containing mottles of Stratum B soil along with charcoal, ash, and an abundance, again, of oxidized iron. Strata B and C are both likely to be soils excavated during construction of the second immigration station, together with debris from buildings demolished following the 1897 fire.

A concentration of angular rock approximately 0.1 to 0.4 foot thick was located between strata B and C along the south edge of unit 1. This rock layer, labelled feature 1, was thinnest in the southwest of unit 1, and it was indistinct at the surface of stratum C in unit 4. The feature may reflect repairs made c. 1900 to the island's rock filled crib bulkhead.

Stratum C was for the most part 0.35 to 0.7 foot thick, but in the center of unit 1 it filled a trough-like depression extending north-south within stratum D. This depression, feature 9, had a roughly tapering width of from approximately 1.2 feet at its surface to 0.5 foot at its base, and was between 0.5 and 1.0 foot deep.

Hypothetically, a discarded timber deposited along with stratum D, but removed prior to deposition of stratum C, may account for this feature.

Stratum D contained a greater density of brick and mortar rubble, but was otherwise similar to stratum B. It presumably results from demolition and grading subsequent to the 1897 fire. Mixed with the base of D was material deriving from the surface of the underlying stratum, at which there was a lens of charcoal, oxidized iron, and burnt boards, glass, and roofing slate. Extending east-west through unit 4 at the base of D was a large timber (feature 18), roughly 0.8 foot square, containing 3 vertical iron bolts (figure 40). The small area of unit 4 south of this timber had no charcoal lens below D, but instead contained stone, some rubble, and sandy loam fill. Stratum D was 0.8 to 1.2 feet thick. The elevation of the charcoal lens and of feature 18 was approximately 5.0 feet A.M.S.L.

The charcoal lens and its content originated directly from the 1897 fire, and the surface of the underlying stratum was evidently at grade in the immediate vicinity of the main building when the fire occurred. It was initially thought that the timber found in unit 4 was a beam located beneath the south wall of the tower at the first main building's southwest corner. Closer examination of historical plans, however, suggests that the corner was situated approximately 89 to 90 feet directly south of the existing main building's southwest corner, immediately north of unit 1. The timber is now believed to derive from the cribwork bulkhead which, together with a 40 foot wide boardwalk, extended along the south front of the first main building. Historical documentation indicates that the boardwalk survived the fire, and that its elevation was between about 2.5 and 5.0 feet above high water (approximately 4.5-7.0 feet A.M.S.L.).

Stratum E, which was defined as including what remained of the charcoal lens at its surface following excavation of D, consisted below the charcoal of light gray and grayish brown sand and clay. The soil exhibited irregular, whirled banding which suggests that it was dredged locally and deposited while still wet. Artifacts were found embedded in the surface of the stratum but were absent below its surface. The stratum undoubtedly originated with the initial filling of this area of the island in 1890-1891.

A shallow depression in the surface of stratum E, containing a mixture of charcoal and soil and approximately 1.0 foot in diameter, was located 1.5 feet north and east of the southwest corner of unit 1. Although a circular postmold (feature 11) and a rectangular posthole filled with stratum E soil were present to a depth of 1.0 foot below this depression, it was uncertain if the top of this post or pile was at or below the surface of E in 1897 (figure 41). Relatively intact, waterlogged remains of the post were discovered at 1.0 foot below the surface of E, but at that depth the posthole was no longer apparent. A similar postmold, feature 19, which shared the same posthole with feature 11, was discovered in the south wall of unit 1, 1.75 feet east of its southwest corner. The post (or pile) which feature 19 reflects had evidently been cut off 0.5 feet below the surface of E, and was covered by the fill of the posthole. Although the purpose of these posts or piles is uncertain, they were located adjacent to a possible trench (feature 13) described below.

Feature 13 was a less clearly discernible and equally problematic feature defined immediately below the surface of stratum E along the west edge of unit 1 and throughout most of unit 4. It consisted of an

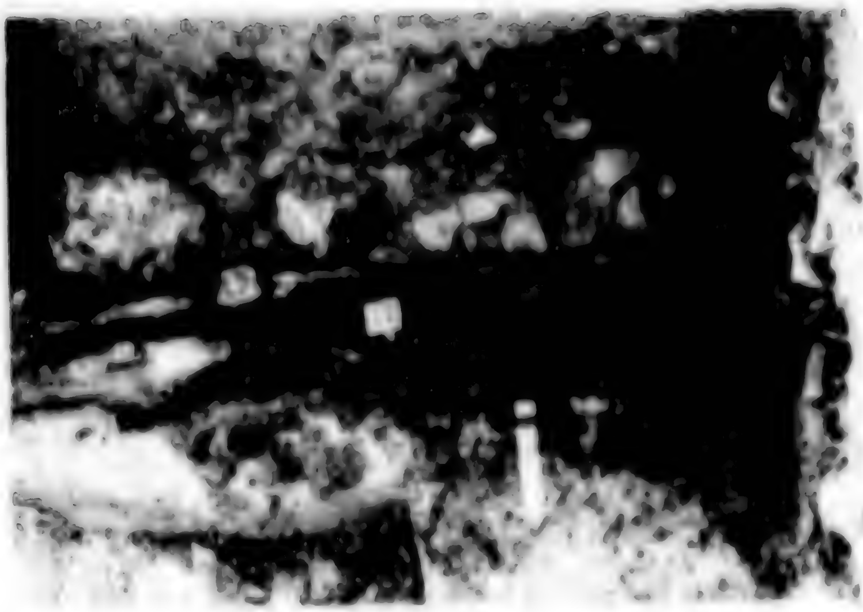

FIGURE 40. CRIBWORK TIMBER, AREA 1 (unit 4), viewed from grid north. Charcoal stains are present on the surface of stratum E north of the timber, while stone and rubble laden fill lies to its south.

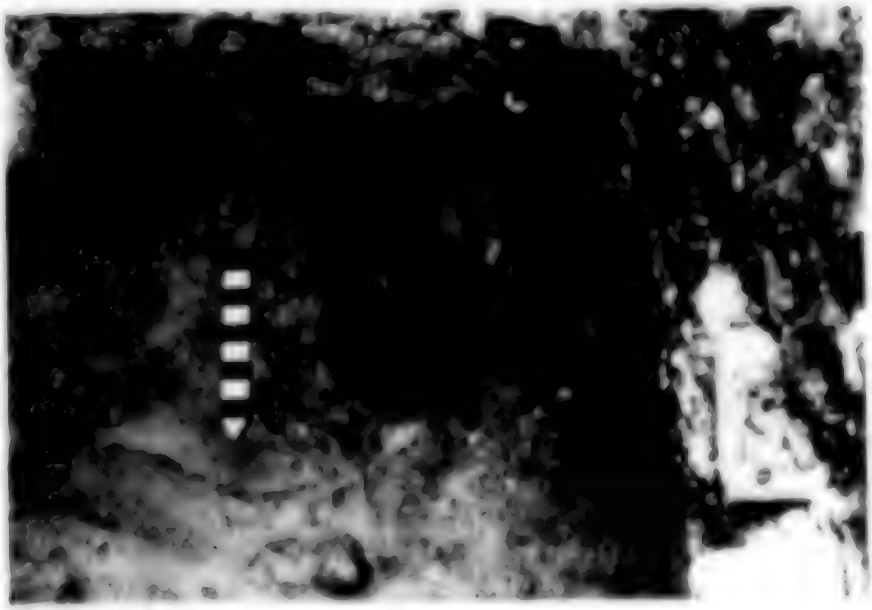

FIGURE 41. POSTMOLDS AND TRENCH, AREA 1 (grid southwest corner of unit 1), viewed from grid north. The dark stain in the center is feature 11. Feature 19 is at the south wall of the unit and feature 13 runs along its west edge.

area of fill virtually identical to stratum E, but slightly more mixed in appearance. The boundary between the feature and the stratum, about 1.0 foot east of the west wall of unit 1, was not consistently apparent. The feature may derive from an excavation made, and quickly filled, soon after deposition of stratum E. Although the feature's purpose is unknown, it is noteworthy that it corresponds with the approximate alignment of the first main building's east wall, and with the location of the bolts in the timber (feature 18) in unit 4. The west margin and the depth of feature 13 were not defined. Excavation ceased at a depth of approximately 1.0 foot below the surface of stratum E in both units 1 and 4.

The excavations in area 1, even though they failed to reveal the southeast corner of the first main building, did indicate that features and grade associated with the first immigration station remain relatively intact 3 feet below the area's existing grade. The strata overlying the 1890-1897 features and grade reflect episodes of grading and filling which followed the 1897 fire and which accompanied construction of the second station. The area's present surface is evidently that established in 1903, when the second station's grounds were landscaped.

Area 1 Findings: Artifacts

The artifacts recovered in area 1 (table 6), although numerous, reflect a limited range of activities. Nearly half the artifacts consist of construction materials and hardware (nails and nail fragments; window glass fragments; fragments of tile, brick, mortar, roofing slate, a few screws, straps, and brackets; etc.). Most of the remainder are unidentifiable fragments and conglomerations of metal and

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TABLE 6. SUMMARY OF ARTIFACT PROVENIENCE, AREA 1 TEST EXCAVATIONS / ELLIS ISLAND.

Artifact Varieties	Provenience Strata: A	B	C	D	E	Features: 11	18	TOTAL
Food Service Ceramics								
Undecorated Ironstone	-	19	1	3	-	-	-	23
Decorated Whiteware	3	1	-	2	-	-	-	6
Undecorated Whiteware	10	14	1	2	-	-	-	27
Other	6	8	1	5	-	-	-	20
Bottles and Bottle Frags.	10	62	8	2	8	-	2	92
Window Glass Frags.	17	67	12	13	15	-	-	124
Structural Ceramic and Mortar Frags.	-	7	21	12	-	-	-	40
Other Structural Materials	-	9	36	18	14	4	2	83
Nails and Spikes	-	95	344	48	19	-	1	507
Miscellaneous Hardware	-	3	10	1	1	-	-	15
Light Bulb and Fixture Frags.	-	-	1	-	-	-	-	1
Misc. Materials/Unidentified								
Ferrous	4	65	331	104	35	-	1	540
Cuprous	-	4	22	4	-	-	-	30
Other Metal	-	1	-	-	-	-	-	1
Glass	-	6	72	2	1	-	-	81
Bone	-	17	4	3	-	-	-	24
Other								
Comb Frag.	-	-	-	-	1	-	-	1
Immig. Service Button	-	-	1	-	-	-	-	1
Pen Nib	-	-	-	-	1	-	-	1
Bottle Stopper	-	1	-	-	-	-	-	1
Unid. Ceramic Frags.	-	-	2	-	-	-	-	2
Iron Handle Frag.	-	-	1	-	-	-	-	1
Ax Head	-	1	-	-	-	-	-	1
Furniture Pull	-	-	1	-	-	-	-	1
Total	50	380	869	219	95	4	6	1,623

melted glass. The events most clearly responsible for the artifacts are the 1897 destruction by fire of the first immigration station and the inclusion of material from demolition of that station within the fill layers deposited during construction of the second station. As noted below, several bottle fragments, ceramic fragments, and a few other non-architectural objects were also recovered. Various artifacts from area 1 are illustrated in figure 42.

Of all the strata, stratum A contained the least quantity of artifacts, and the smallest frequency of architectural items. Both of these characteristics are due largely to A's origin as "clean" top-dressing, but no artifact collection was made from stratum A in unit 4, which accounts in part for the small amount. The artifacts in stratum A were fragments of window glass, bottles, and ceramics, together with a few pieces of corroded iron (nails?). The ceramics were mostly undecorated whiteware fragments, but fragments of decorated whitewares (1 molded, 1 blue edge-decorated, and 1 other blue decorated), white porcelain (2), tan-bodied stoneware (2), annularware (1), and redware (1) were also recovered.

Stratum B yielded several times more artifacts than A, and although fragments of ceramics and bottles were frequent, most of the artifacts were nails and nail fragments (predominately machine-cut), window glass fragments, and unidentifiable iron fragments. White ironstone fragments, presumably from institutional wares, were the most common ceramics, along with undecorated whiteware fragments. Also found were 1 transfer-printed whiteware, 5 stoneware, and 3 white porcelain fragments. Noteworthy among the artifacts from stratum B were a shingling hatchet head and a small, ground-glass bottle stopper.

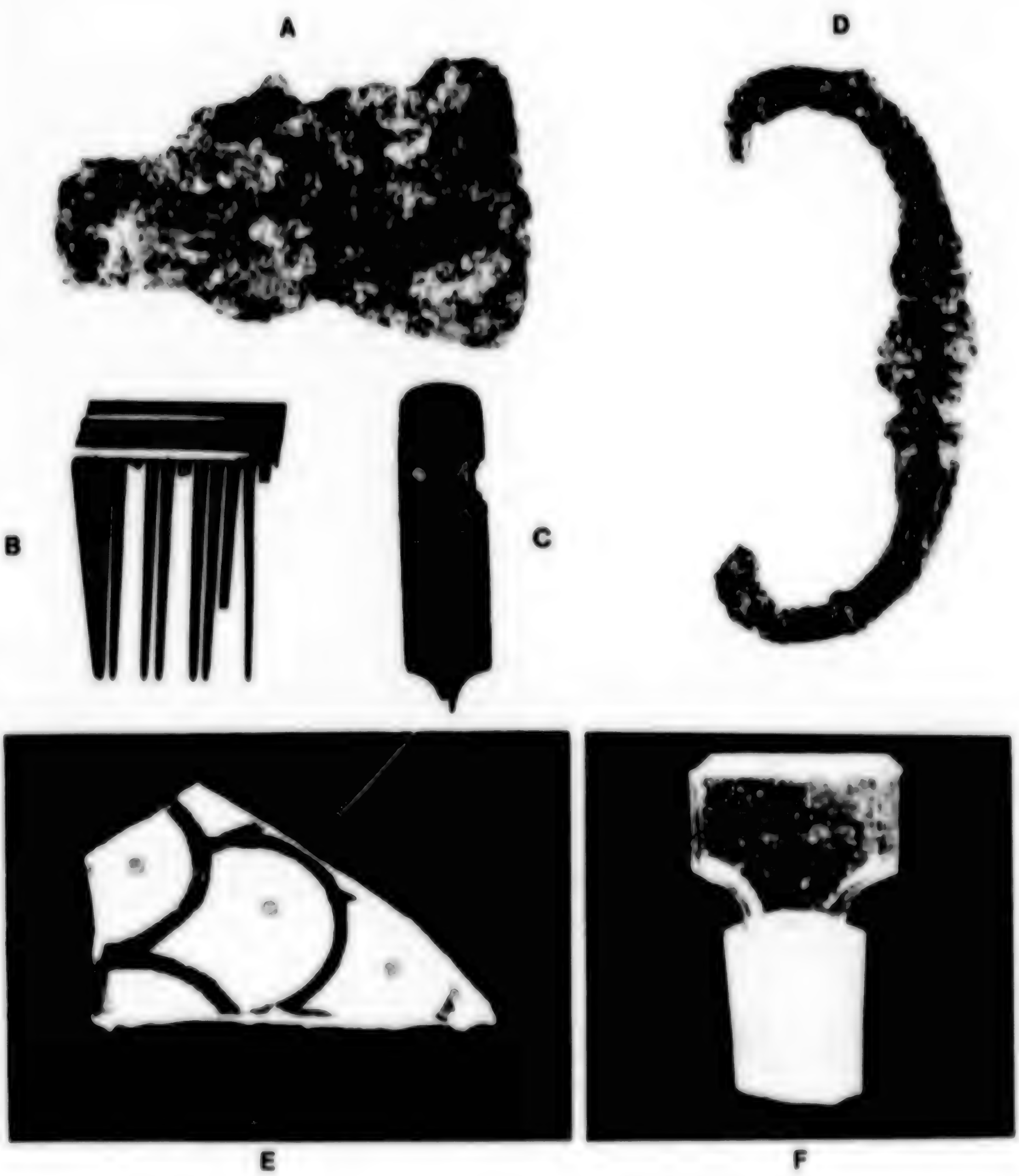

FIGURE 42. ARTIFACTS, AREA 1:

A) very corroded iron hatchet head, from stratum B. B) hard rubber (?) comb fragment, stratum E, C) cuprous alloy pen nib, tratum E. D) iron furniture pull, stratum C, E) blue and brown painted whiteware fragment, stratum D, F) glass bottle stopper, stratum B. (D at actual size. A at 1/2 X actual size. B, C, E, & F at 2 X actual size.)

The largest number of artifacts from the area -- more than half the total -- was found in stratum C, a layer of fill heavily laden with charred material and construction debris. Not surprisingly, the vast majority of the artifacts from this context were architectural in nature. Nails and nail fragments (nearly all machine-cut), and unidentified fragments and clumps of corroded iron, were especially frequent. Very few ceramic fragments were recovered, even including structural ceramics (7 tile fragments, 3 drainpipe fragments, 2 bricks, and 1 brick fragment; however, other brick fragments were discarded during excavation). Fragments of glass, especially melted fragments, were more common, but identifiable bottle fragments were infrequent. A fragment of a cast iron handle, a furniture pull, and an Immigration Service uniform button were the most notable of the artifacts from stratum C. The uniform button, a shank type with a cuprous alloy face and back and a gray metal core, was embossed centrally with an intertwined "US" monogram and with "Immigra[tion]" and "Service" above and below the monogram.

The number of artifacts in stratum D was much smaller than in C, and they were concentrated at the surface and base of the stratum, which consisted largely of brick and mortar rubble. Nearly half the artifacts were unidentified, corroded iron fragments, and cut nails were again the most common identifiable items. Fragments of other structural artifacts, including charred wood, roofing slate, window glass, and a terra-cotta tile, were also collected, along with a whole brick (which measured 8 by 3 3/4 by 2 1/4 inches). Among the ceramics recovered were 4 fragments of decorated pearlwares (3 handpainted, 1 transfer-printed) and 2 of decorated whitewares (1 hand-painted, 1 edge-decorated), as well as a buff colored saltglazed stoneware fragment.

A still smaller number of artifacts was recovered from the top of stratum E. Although this stratum constituted the island's surface at this location between 1890 and 1897, it probably had a boardwalk over it, and the artifacts again appear to derive primarily from the 1897 fire. Unidentified iron, nails, window glass, and charred wood together comprise 80 percent of the artifacts from this context. The only other objects were bottle fragments, a roofing slate fragment, a piece of copper wire, a pen nib, and a hard rubber (?) comb fragment. A few pieces of charred wood, 2 bottle fragments, 2 slate fragments, a nail, and an iron fragment were also collected from features 11 and 18, associated with stratum E.

Area 2 Findings: Stratigraphy and Features

Units 2, 3, and 5 were located between 20 and 35 feet north of the northwest corner of the existing main building's east wing. The location was chosen because of the likely presence there of features deriving from buildings associated with Fort Gibson. The area was also the site of a large, frame "Disinfecting House," constructed shortly before the 1897 fire which destroyed the first immigration station. The major features actually found in the area were the brick foundation and concrete slab floor of the disinfecting house. However, one relatively early feature -- a brick pavement -- was discovered below the level of the foundation. (Figures 43 and 44.)

The surface soil in this area, stratum A, consisted of between 0.2 and 0.5 foot of dark brown loam. This soil was again top-dressing deposited when the island was landscaped in 1903. Here, stratum A's

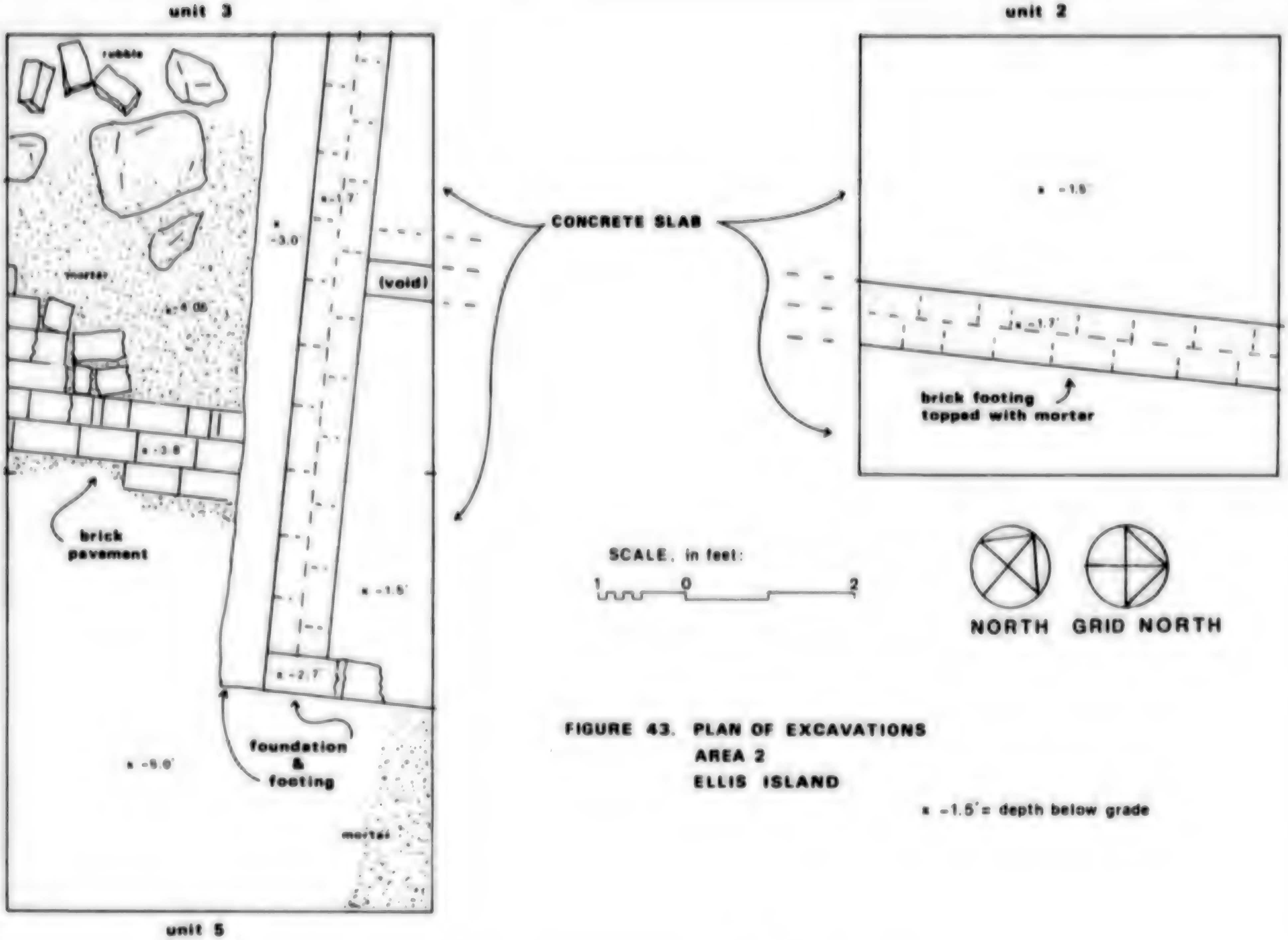

FIGURE 43. PLAN OF EXCAVATIONS
AREA 2
ELLIS ISLAND

x -1.5' = depth below grade

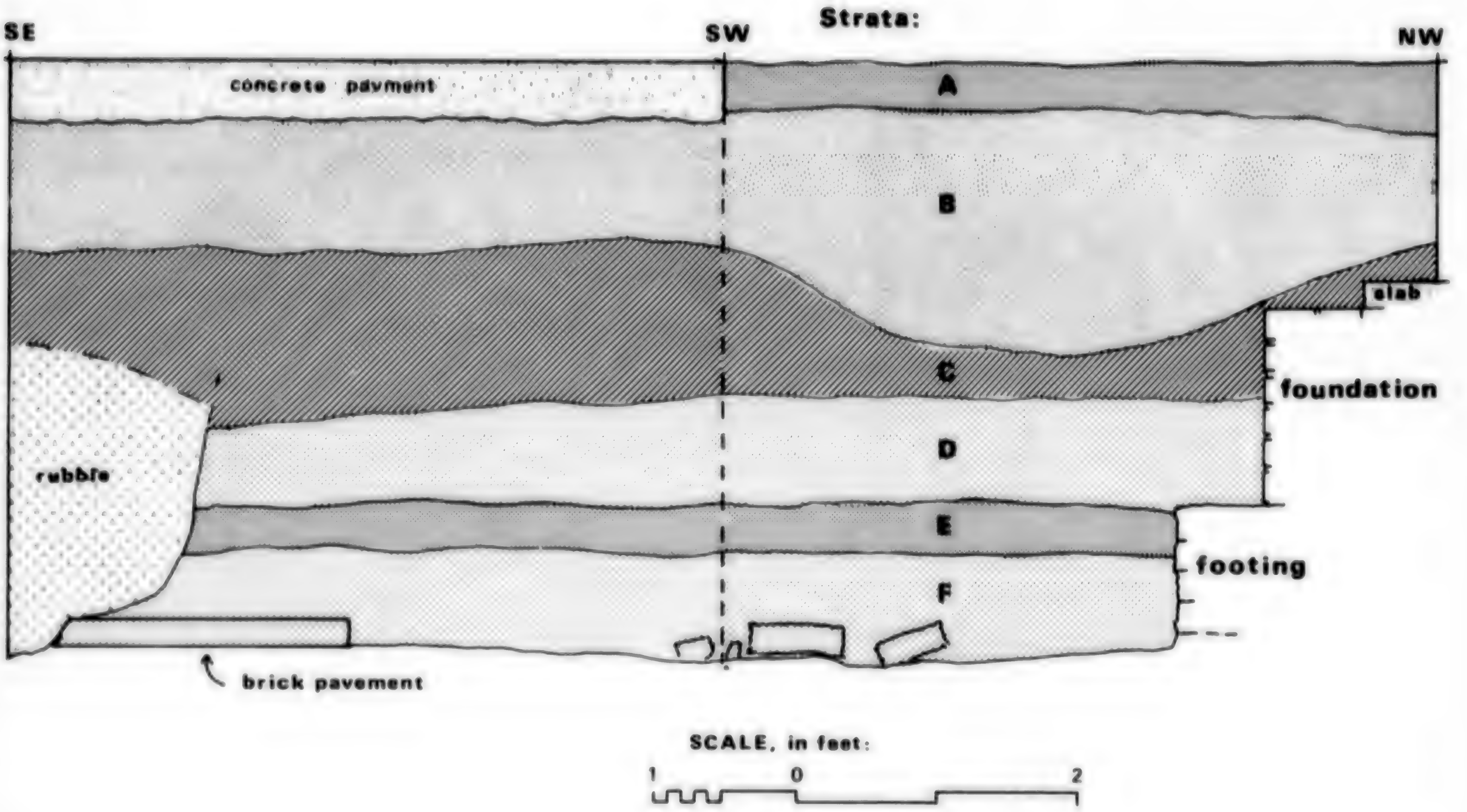

FIGURE 44. PROFILES - UNIT 3 / AREA 2 - ELLIS ISLAND

surface elevation was approximately 10.0 feet A.M.S.L. Stratum B consisted of mottled, medium to light brown clayey loam containing brick, mortar, and slate fragments and very oxidized iron nails, especially in unit 2. A pocket of relatively homogeneous grayish clay with decayed organic inclusions, together with a large quantity of slate fragments, was present within this stratum in the southwest corner of unit 2. In units 3 and 5, stratum B was more loamy and homogeneous, and it filled a wide trough extending east-west through these units, to a depth of about 1.75 to 2.25 feet below the surface. This is presumably the result of a hedge having been planted through this location as part of the original landscape.

At the base of stratum B in unit 2, below a concentration of charred and fragmented construction material, was feature 6, the concrete slab floor of the disinfecting house, with a surface elevation of approximately 8.5 feet A.M.S.L. The slab was bisected in the eastern half of the unit by a pocket for a partition wall sill (?), 0.7 foot wide by 0.2 foot deep below the surface of the slab (feature 7). The footing for the partition, below a thin layer of cement mortar, was a double row of stretcher bounded bricks and brick halves (feature 8). Dark charcoal staining was present at the surface of this footing and over much of the slab. The south edge of the slab and a brick foundation were located beneath stratum C in units 3 and 5 (figure 45).

Stratum C was defined, in units 3 and 5, as consisting primarily of very dark grayish brown loam and charred construction debris. Its surface was from 1.25 feet (at the north and south margins of the units) to 2.25 feet below grade. Included with this stratum were pockets of grayish and reddish brown clay loam along the south margin of the units, and a massive deposit of jumbled mortar, bricks, and brick fragments which filled a depression in the southeast corner of unit 3 and throughout nearly all of unit 5. This depression and the deposit filling it extended to a depth of 5.0 feet below grade. The base of stratum C was otherwise, notably in unit 3, 2.2 to 2.7 feet below grade. The base in both units was marked by a lens of burnt roofing slate fragments.

The roofing slate suggests that the depression was an open excavation at the time of the 1897 fire, subsequently filled with masonry from a demolished building. It is not known what purpose it may have served, but it was located adjacent to a corner of the foundation (figure 46) at the south edge of the concrete slab. (This was not, however, one of the major corners of the structure.)

The foundation, feature 14, consisted of six well-laid courses of stretcher bond brick atop four crudely laid spread footing courses. At the corner, located 2.0 feet south and 2.25 feet east of the northwest corner of unit 5, the top four courses of brick were missing. The top of the foundation was approximately 8.35 feet A.M.S.L., its base approximately 6.1 feet A.M.S.L.

The lens of burnt roofing slate at the base of C also suggests that the surface of stratum D, located in unit 3 at an elevation of 7.5 to 8.0 feet A.M.S.L, was at grade in 1897. The upper part of stratum D covered the ledge formed by the spread footing of feature 14, and no builders' trench was evident. This suggests that the entire stratum may have been deposited following construction of the disinfecting house. It is more likely, however, that stratum D predates development of the first immigration station, that its surface was graded following

FIGURE 45. BRICK FOUNDATION, AREA 2 (unit 3), viewed from grid west. The edge of a concrete floor slab, bisected by a pocket for a partition wall sill (?), lies at the north margin of the unit.

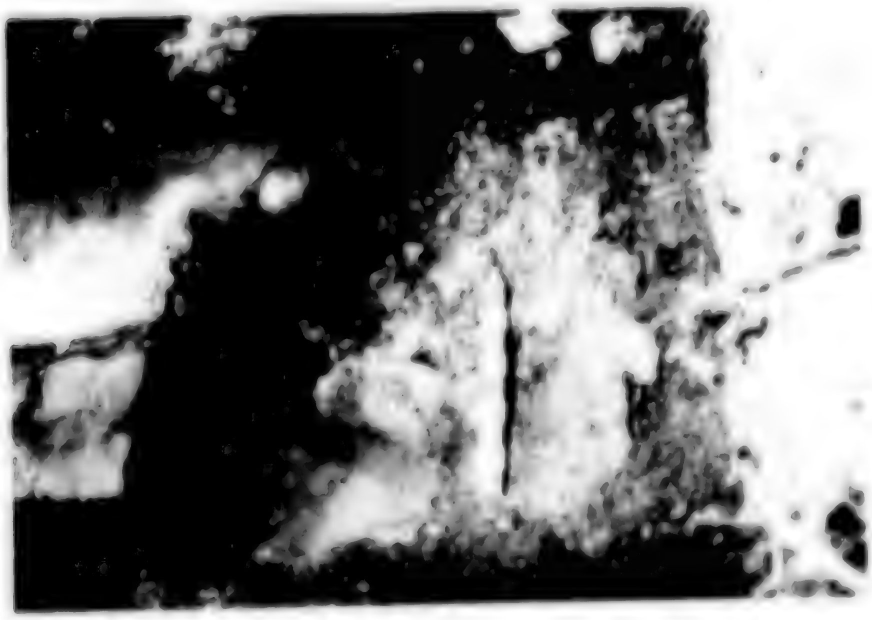

FIGURE 46. BRICK FOUNDATION CORNER, AREA 2 (unit 5), viewed from grid south. The corner bricks were found to have been cut away, as shown.

construction of feature 14, and that the footing was constructed within a trench no larger than the footing itself. The elevation of the surface of D is roughly consistent with the area's elevation -- about 8 feet A.M.S.L. -- as recorded in 1890 (figure 13 and table 1, above). The soil of stratum D, 0.5 to 1.0 foot thick, was a medium brown sandy silt loam mixed with a moderate quantity of oyster shell, for the most part very fragmented. The base of stratum D was marked by a lens of unburnt roofing slate fragments, at an elevation of 6.75 to 7.0 feet A.M.S.L.

The unburnt roofing slate at the surface of stratum E reflects some episode of building construction or alteration which most likely occurred prior to 1890-1891, in connection with development of the naval magazine. The dark brown humic nature of stratum E, a 0.2-0.3 foot thick layer of sandy silt loam at an elevation of approximately 7.0 feet A.M.S.L., suggest that it was at grade for a considerable period prior to deposition of D, which is also likely due to the naval magazine's development. Stratum F, a medium brown sandy loam similar to D, 0.55 to 0.85 foot thick beneath E, may have been a non-humic component of what was initially a single body of fill comprised of both E and F. It was probably deposited during the 1808-1812 phase of Fort Gibson's development. Its surface elevation is slightly less than the 7.5 feet A.M.S.L. elevation recorded for the fort's parade in 1819 (figure 6 and table 1), but it is substantially lower than the (exaggerated?) 8.5 to 9.5 feet A.M.S.L. elevations on an 1813 drawing (figure 4). Stratum F, however, contained a military button manufactured in 1816 (see below) which may or may not have been intrusive. If this artifact was not somehow intrusive, the implication of course is that the stratum postdates 1816.

Beneath stratum F in unit 3 was a set of features (collectively designated Feature 16) likely to have been associated with an early phase of Fort Gibson's development (figure 47). In the southeastern corner of the unit, at an elevation of approximately 6.25 feet A.M.S.L., remnants of a brick pavement were found bedded on very sandy lime mortar. The whole bricks, on average, were approximately 7.5 inches long by 3.5 inches wide by 2.5 inches thick. The brick appeared to have been hand-molded. Randomly piled bricks and stones were found at the same elevation in the southwest corner of the unit. Over most of the unit was a layer of mortar, about 0.1 foot thick, from which the brick pavement had apparently been removed. Rising to the surface of this mortar, and embedded in the soil below, were a few large blocks of cut sandstone. This set of features was left intact, and the soil below it was not excavated. Where the soil was already exposed, however, along the west wall of unit 3 and at the base of unit 5, it was similar in appearance to strata D and F.

In unit 5, where stratum C filled a deep depression which extended below the level of the above set of features, a layer of mortar was evident below the pavement along the west edge of the unit, and in its northeastern corner at approximately the same elevation. Excavation in unit 5 stopped at the base of the depression.

Excavation in area 2 provided significant, although limited, information concerning historical structures in that area. The concrete slab, foundation, and apparent exterior corner, which undoubtedly derive from the disinfecting house, suggest that similar features occupy a large area north of the existing main building's east wing. The only available plan showing the disinfecting house (figure

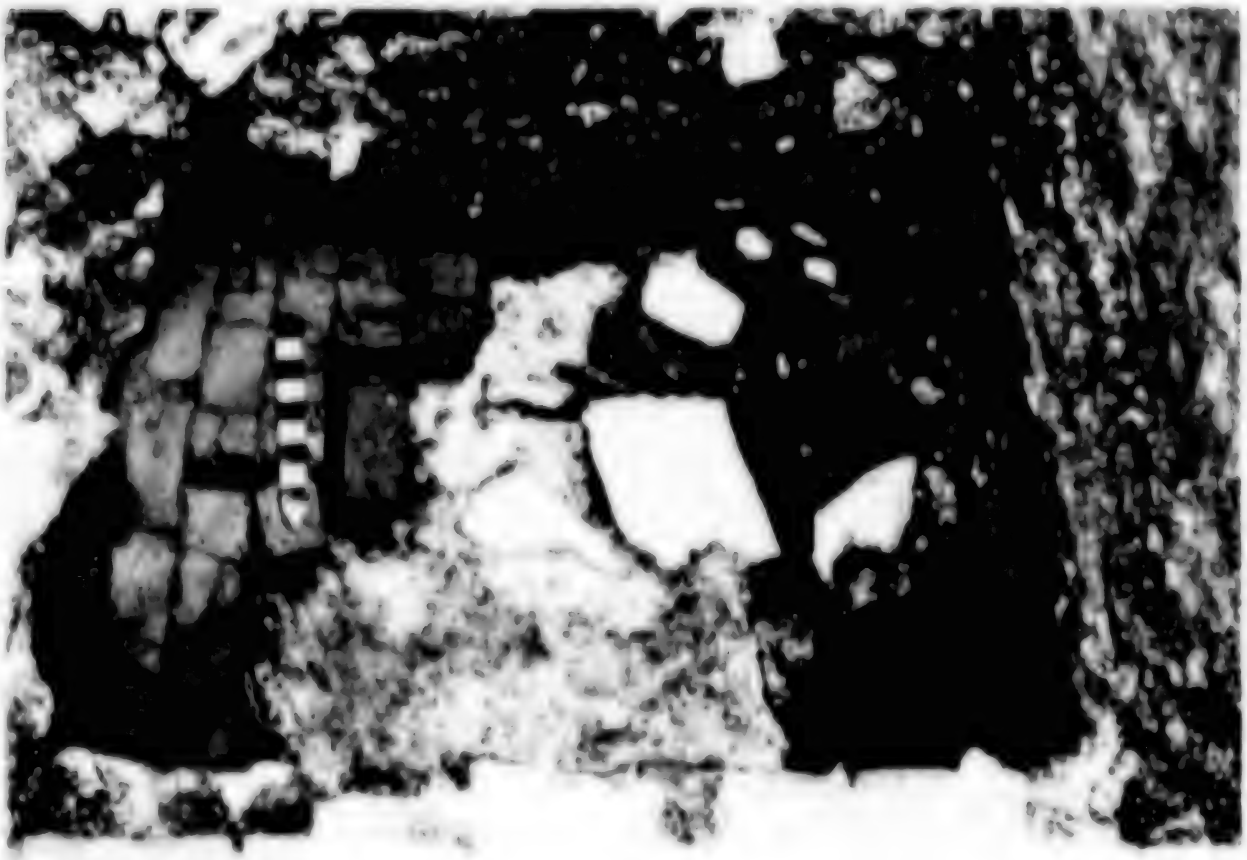

FIGURE 47. BRICK PAVEMENT REMNANTS, AREA 2 (unit 3), viewed from grid north. Bricks were absent from the mortar bed of the pavement in the center of the unit.

14, above) indicates that it is approximately 70 feet square. The corner located in unit 5 may indicate that the "covered way" along the southwest side of the building did not extend as far to the southeast as shown on the plan. The west corner of the structure is likely to be no more than 5-6 feet west of units 2 and 3.

The brick pavement discovered nearly 4 feet below present grade does not correspond in location with any buildings associated with Fort Gibson, but its origin must be related to development of the fort. It may reflect the existence of pavement over an extensive area of Fort Gibson's original (c. 1798) parade, or simply a walkway between structures.

The presence of cut stone and fill soil below the pavement indicates that the island's original, natural surface lies at an unknown depth below 5 feet A.M.S.L. (the depth of excavation in unit 5). The original surface is likely, nonetheless, to have an elevation of at least 3 or 4 feet A.M.S.L. As reflected by the pavement, grade was elevated to approximately 6.25 feet A.M.S.L. sometime during the initial development of Fort Gibson, c. 1794-1798. A higher grade, approximately 6.75 to 7.0 feet A.M.S.L., was probably established during the 1808-1812 phase of the fort's development. This modification is represented by strata E and F. Stratum D is likely to have been deposited sometime during development of the naval magazine on the island (c. 1835-1865), although its surface, at 7.5 to 8.0 feet A.M.S.L., was evidently graded when the disinfecting house, with a floor elevation of about 8.5 feet A.M.S.L., was constructed (1896-1897). Existing grade, at about 10.0 feet A.M.S.L., was established in 1903 upon completion of the second immigration station's main building.

Area 2 Findings: Artifacts

Compared with the artifacts from area 1, those from area 2 are more diverse. (Figure 48 illustrates several of the artifacts from area 2.) Architectural artifacts predominate here also, however, comprising more than half the total (table 7). This is again a consequence of the 1897 fire, and of debris from the fire-destroyed structures having been included within layers of fill deposited subsequent to 1897.

The frequency and diversity of artifacts in stratum A are due in part to the area's proximity to the main building, and in part to its use historically as a recreation area. Much of the structural material recovered from this context (tarpaper, linoleum, wood, light bulb and fixture fragments, etc.) probably reflects the post-1954 abandonment and deterioration of the station's buildings, and more recent rehabilitation efforts. The recovery of objects such as cut nails and an arc-light carbon is likely to be the result of mixing of material from lower strata. Few ceramic fragments were recovered in A, but bottle fragments were fairly common. Some of the bottle fragments were deposited during the immigration station's existence, but others are clearly recent. A few were probably already contained in the soil of stratum A when it was laid down as top-dressing in 1903. The same origin is likely for the white salt-glazed stoneware fragment recovered in A, and possible for the other ceramic fragments.

The glass marbles found undoubtedly belonged to immigrant children, and were lost when this area was a playground (the 1910s through the 1930s). The one-cent pieces (a 1941 Canadian and a 1945 U.S.) and the plastic comb fragment may well have been lost in the area

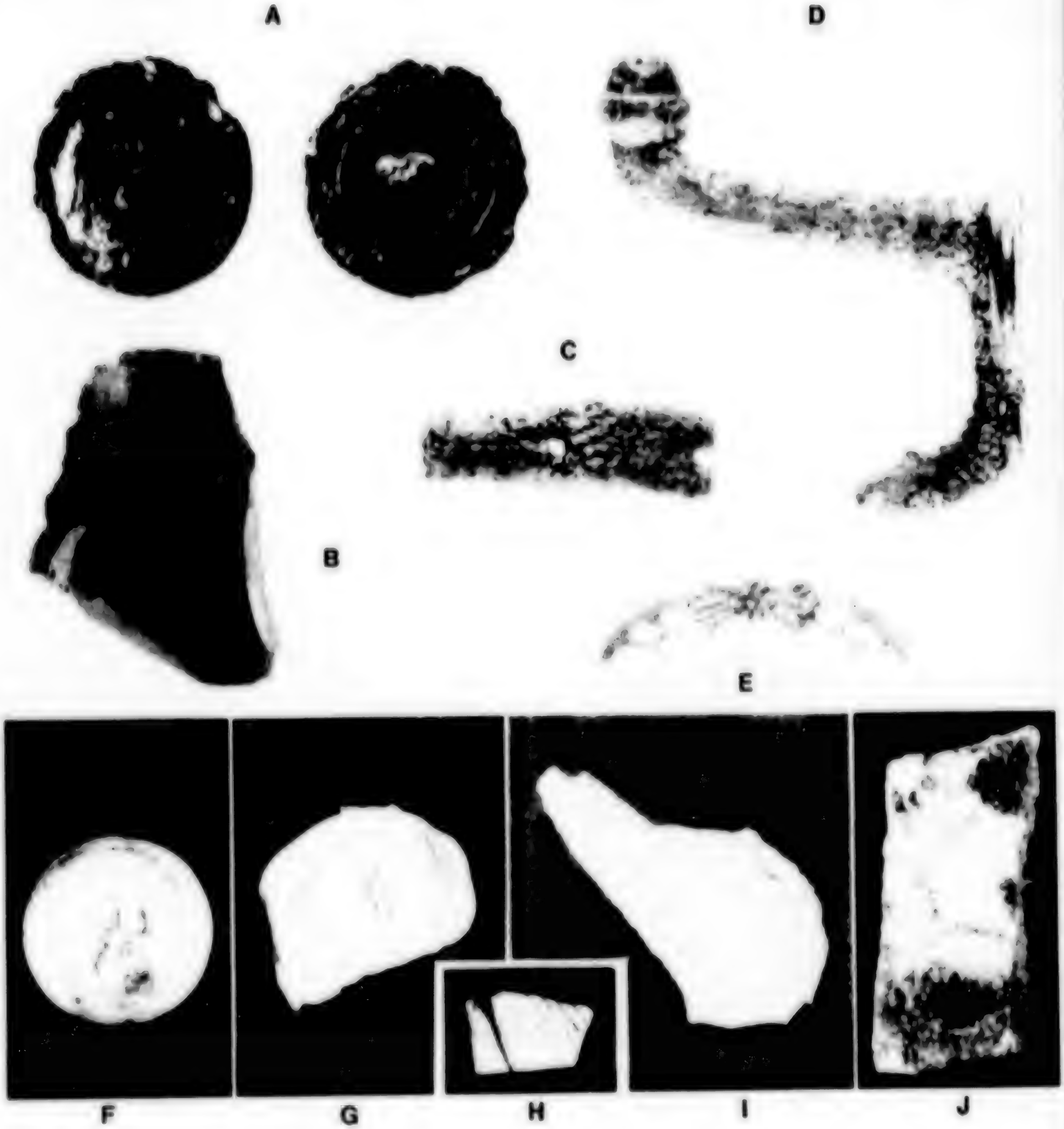

FIGURE 48. ARTIFACTS, AREA 2:

A) U.S. Infantry coat button, pewter, c. 1816, from stratum F, B) chert flake, stratum D, C) small iron hammer head, stratum A. D) iron coat hook, stratum B, E) cuprous alloy shoe buckle fragment, stratum D. F) glass marble, stratum A. G) porcelain bottle stopper, stratum C. H) "scratch-blue" salt-glazed stoneware fragment, stratum B, I) white clay tobacco pipe bowl fragment, stratum B, J) blue painted delftware tile fragment, stratum D. (C, D, & E at actual size, the remainder at 2 X actual size.)

TABLE 7. SUMMARY OF ARTIFACT PROVENIENCE, AREA 2 TEST EXCAVATIONS / ELLIS ISLAND.

	Provenience Strata:						Feat.	
Artifact Varieties	A	B	C	D	E	F	7	Total
Food Service Ceramics								
Undecorated Ironstone	-	14	3	-	-	-	-	17
Decorated Whiteware	1	3	-	2	-	-	-	6
Undecorated Whiteware	3	18	-	2	-	-	-	23
Other	1	17	2	4	-	-	-	24
Bottles and Bottle Frags.	45	254	35	5	-	-	-	339
Window Glass Frags.	15	49	4	-	-	-	-	68
Structural Ceramic and Mortar Frags.	3	10	31	9	-	-	3	56
Other Structural Materials	24	4	12	25	2	2	1	70
Nails and Spikes	20	230	696	9	3	4	10	972
Miscellaneous Hardware	2	9	23	-	-	-	-	34
Light Bulb and Fixture Frags.	9	7	2	-	-	-	-	18
Misc. Materials/Unid.								
Ferrous	3	110	147	11	-	1	11	283
Cuprous	1	2	8	-	-	-	-	11
Other Metal	-	-	3	-	-	-	-	3
Glass	-	23	158	1	1	2	-	185
Plastic	10	1	-	-	-	-	-	11
Bone	2	21	5	1	3	-	-	32
Other								
Coins	2	-	-	-	-	-	-	2
Comb Frag.	1	-	-	-	-	-	-	1
Button	-	-	-	-	-	1	-	1
Buckle Frag.	-	-	-	1	-	-	-	1
Tobacco Pipe Frags.	-	5	1	1	-	-	-	7
Cigarette Package Frag.	1	-	-	-	-	-	-	1
Glass Marbles	3	1	-	-	-	-	-	4
Photographic Film Frag.	1	-	-	-	-	-	-	1
Bottle Stopper	-	-	1	-	-	-	-	1
Bone Handle Frag.	-	-	-	1	-	-	-	1
Pan	-	-	-	1	-	-	-	1
Hammer head	1	-	-	-	-	-	-	1
Coat Hooks	-	1	1	-	-	-	-	2
Chain Link Fence Frag.	1	-	-	-	-	-	-	1
Terra Cotta Pot Frags.	-	1	1	-	-	-	-	2
Coal and Slag	-	-	-	30	-	-	-	30
Flakes (lithics)	-	1	-	4	-	1	-	6
Total	149	781	1,133	107	9	11	25	2,215

by detainees when it was part of their fenced and guarded exercise yard (the 1940s and early 1950s). A piece of chain link fencing and the head of a small tacking hammer were also recovered in A.

Stratum B yielded large amounts of bottle fragments, nails, and unidentified iron, and a moderate amount of ceramic fragments. The nails and iron, together with many of the fragments of bottles, window glass, melted glass, other structural materials, and hardware (arc-light carbons, iron drain trap and elbow, screws, etc.) for the most part originate from demolition of the first immigration station. Some, however, probably results from debris disposal by workmen during construction of the second station, and some from mixing of material formerly at the surface of the area. A glass marble fragment, for instance, was recovered in B, although it was probably first deposited in A.

In addition, several of the objects recovered in B, in particular many of the ceramic fragments, have a substantially earlier origin than the stratum itself. This is presumably due, at least in part, to the inclusion within this fill layer of soils excavated locally during the second station's construction. This is the likely origin of such late eighteenth/early nineteenth century wares as a Chinese export, blue underglaze painted porcelain fragment; a "scratch-blue," white salt-glazed stoneware fragment; and 2 creamware fragments. Five other porcelain fragments were found in B, as well as fragments of 3 other stonewares, 4 redwares, a Rockingham-type earthenware, a green slip decorated earthenware, and 3 blue decorated (painted or transfer-printed) whitewares. Some of these ceramics, and the 5 white clay tobacco pipe fragments recovered in B, most likely derive from strata which predate establishment of the immigration station.

The greenish gray chert flake located in B certainly predates the immigration station. This by-product of the prehistoric manufacture of stone tools, which itself appears to have been utilized, may derive from some part of the island's now buried prehistoric surface.

The artifacts found in stratum C, at the base of which was 1897 grade, derive more directly and exclusively from the demolished structures of the first immigration station. Cut nails were especially frequent, while bottle and ceramic fragments were infrequent. Large amounts of melted glass (most, probably, from windows, some from bottles) and of unidentified iron were also collected, together with smaller amounts of hardware (mostly screws, but including a latch plate and a sash window pulley), roofing slate, charred wood, mortar, and conglomerations of mortar, plaster, stone, glass, etc. Among the notable items from C were a "lightning" type porcelain bottle stopper fragment (marked "PAT'D/K. HUTTER/FEB. 7/1893"), an iron coat hook, a white clay pipe stem fragment, and a terra-cotta flower pot fragment.

Stratum D, a layer of fill probably deposited during development of the island's naval magazine, yielded few artifacts, most of which are of little interest (i.e., 21 wood fragments, 22 pieces of coal and 8 of slag, 4 slate fragments, 8 mortar fragments, and 11 unidentified iron fragments). As in stratum B, several of the artifacts recovered in D have an earlier origin than the stratum itself. The soil comprising D, which most likely derives from excavations on the island, presumably already contained these artifacts when the stratum was deposited. Among the artifacts having an early origin are a black glazed, gray bodied "Jacksfield" ware ceramic fragment (late eighteenth century), and a white salt-glazed stoneware fragment (late eighteenth/early nineteenth century). Also among the ceramics were fragments of porcelain (1), redware (1), and transfer-printed whitewares (1 blue and 1 brown). A blue painted delftware wall or fireplace tile fragment, a bone handle fragment, a decorative, cuprous alloy shoe buckle fragment (cast with a floral motif), and a white clay pipe stem fragment were also found in D. The prehistoric lithics found in D -- 3 gray chert flakes (1 utilized) and 1 small chunk of white quartz -- are certainly earlier than the stratum. That 3 of the 9 cut nails found in D are of cuprous alloy may reflect preferential use of such nails in the naval magazine. A very corroded, ferrous alloy sauce pan, 5 inches in diameter by 3 1/2 inches high, with a 5 inch long handle, was found toward the base of D.

Strata E and F, which probably originated as fill in the early nineteenth century, yielded very few artifacts, nearly all of which were non-diagnostic construction materials (wood, slate, and glass). A waterworn rhyolite flake was recovered in stratum F. Of the 7 cut nails found in these strata, 1 from E was of cuprous alloy. The one truly diagnostic artifact discovered in these strata -- a cast pewter button found in stratum F -- is nonetheless remarkable. It is a U.S. Infantry coat button having a right facing eagle device with 3 arrows in its right talon and a shield bearing the script letter "I" in its left. This device dates the button to the 1815-1821 period (Albert 1976:23-24; the button is identical with Albert's type GI-38B). The maker's mark -- * CRUMPTON * PHILA -- within concentric circles around the stump of button's missing shank, indicates further that the button was manufactured in 1816, the final year in which William Crumpton of

Philadelphia furnished infantry buttons (Albert 1976:466). While originally convex, this button is now virtually flat, and approximately 0.82 inches (21 mm) in diameter.

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CONCLUSIONS AND RECOMMENDATIONS

Summary of Findings

The likely prehistoric and early historic use of Ellis Island, and its documented historical development, unquestionably resulted in the deposition of artifacts and the creation of strata and features which are now the island's archeological resources. The characteristics of many of these resources are to some extent predictable on the basis of existing information.

From what is known regarding other prehistoric sites in the region, it may be expected that artifacts reflecting prehistoric subsistence activities are present, together with faunal and botanical remains (especially shell), on remnants of the island's original surface. Specific kinds of tools and fragments of various types of pottery could provide evidence not only of the sequence of cultures making use of the island but also, by their association with organic materials, the nature of that use, especially what food resources were exploited there, and when. The preservation of evidence of this sort, although far from complete due to disruptions entailed by the island's historical development, is nonetheless significant. The area of the island where the original surface appears to be least disrupted, and the prehistoric resources best preserved, is the former site of Fort Gibson, beneath and north of the existing main building's east wing, due in part to the early use there of large amounts of fill. Like the prehistoric, the early historic use of Ellis Island (c. 1630-c. 1750) is likely to have consisted of periodic exploitation of local food resources. Evidence of this period of use -- in the form of contemporaneous artifacts of European or Euro-american origin -- would also occur on remnants of the island's original surface.

Proprietary commercialization of the island (c. 1750-1808) occurred with establishment of a tavern and other facilities to serve the needs primarily of fishermen and oystermen. Archeological evidence for the structures and activities of this period would be more abundant and diverse than evidence of earlier historic use, but it too would be associated with the island's original surface and it may have been previously disrupted. This evidence would most likely occur where the structures and activities were concentrated, beneath and immediately north and northeast of the existing K and L building.

Features and artifacts deriving from the military development of Ellis Island -- the construction and use, beginning in 1794, of Fort Gibson at the southeast end of the island, and later of naval magazines and ancillary structures throughout the island -- are likely to be among the most abundant and significant of the island's archeological resources. These resources also may have been disrupted in many areas of the island, particularly where the existing main building overlaps the former site of Fort Gibson. They nonetheless have the potential of providing valuable information regarding nearly a century of military activities, and are likely to remain an archeologically recognizable component of the historical system of defenses for New York Harbor. Two features which derive from fortification related structures were recorded in the course of archeological monitoring of excavations made in 1980 and 1981 below the southern part of the main building's east wing. The most intact archeological reflection of Fort Gibson is likely to be situated in the area north of the main building's east wing, and its barracks' foundations are likely to be partially preserved under the railroad ticket office. This project's test excavations north of the east wing revealed strata and features deriving from the fort.

The development of the first immigration station beginning in 1890, and its destruction by fire in 1897, are also likely to be reflected by abundant and significant archeological resources. The station's purpose for existing — the inspection of would-be immigrants and the detention and care of those deemed inadmissible or requiring further examination or hospitalization — entailed routines for the activity of immigrants, and for debris disposal, which would have limited the amount and kinds of artifacts deposited on the island during its five and one-half years of operation. However, the suddenness of the station's destruction, and the subsequent burial beneath fill of grade, features, and material deriving from demolished structures, are together likely to have resulted in preservation of an informative archeological reflection of the first station. Resources deriving from the station have been encountered previously, in the course of documented ground disturbances, and were revealed by the testing done in connection with this study. Such resources are likely to be relatively common throughout much of what is now identified as Island 1, at depths of 2 to 3 feet below exterior grade, and directly beneath the basements of existing buildings.

The remarkably well documented development of the second immigration station also resulted in archeological resources, but the structural preservation of nearly the entire station and the operational routines for immigrant activity and debris disposal seriously limit the quantity and significance of these resources. Modification, demolition, and abandonment and burial of some structures associated with the second station (bulkheads, docks, the surgeon's house, the main building's entrance canopy, etc.) has resulted in the creation of archeological features, although it is doubtful, given the quantity of existing documentation, that archeological investigation of these features would advance our knowledge of the structures. The features should, nonetheless, be recorded if affected by new construction. Deposition of artifacts in surface and buried contexts also occurred during the development and operation of the second station, but as the surface survey of the island demonstrated, such artifacts for the most part fail to provide a significant archeological reflection of the second station.

The archeological survey of open areas on Ellis Island was expected to yield artifacts which derived from the operation of the second immigration station on Island 1, and of the Public Health Service hospital on Islands 2 and 3. This expectation was borne out, although to a more limited extent than anticipated. The significance of the artifacts collected, and of those remaining on the island, is diluted by the presence of many objects which are likely to have a nineteenth century origin and which were almost certainly brought to the island from elsewhere along with the soils used as topdressing in the early twentieth century. More importantly, structural materials and hardware, the most abundant artifacts throughout the island, provide little basis for improving upon interpretations of the island's physical development based on architectural and historical data. Aside from some minor landscape elements, such as benches and birdbaths, most of the features located in the course of the survey also derive from adequately documented structures. Artifacts other than structural materials and hardware, particularly diagnostic artifacts, are relatively uncommon, and they also do not lend themselves to detailed interpretation of the uses made of the island.

The surface of Ellis Island consequently possesses little potential for worthwhile archeological investigation. Nonetheless, those artifacts recovered (and others still present) at the surface of the island which do clearly derive from immigration station and hospital related activities possess a significance which surpasses the archeological potential of their context. This significance derives from the artifacts' direct association with a nationally renown historic site, and their potential for enhancing the public's appreciation of that site through their interpretation and display.

The archeological test excavations made south of the main building's southeast corner showed that grade, features, and artifacts clearly associated with the first immigration station are present there, and presumably throughout nearly all the southern part of Island 1. These resources were located at an elevation of approximately 5 feet A.M.S.L., beneath about 3 feet of fill originating from construction of the second station, and at the surface of fill deposited during the initial development of the first station. The features (2 postmolds, a cribwork timber, and a trench), together with existing documentation, suggest that the southeast corner of the first station's main building was located very near where the excavations were made.

The excavations made north of the northwest corner of the existing main building's east wing revealed portions of the concrete slab floor and foundation of the first station's disinfecting house. The slab was located 1.5 feet below existing grade, at an elevation of about 8.5 feet A.M.S.L. Contemporaneous exterior grade adjacent to the foundation, laden with charred material reflecting the 1897 fire, was revealed at elevations of between 7.5 and 8.0 feet A.M.S.L. Earlier historic grades, which evidently derive from two phases of Fort Gibson's development, were discovered at elevations of about 7.0 and 6.25 feet A.M.S.L. Remnants of a brick pavement were found at the lowermost of these grades, atop fill placed in the area to elevate the site of the fort. This fill, which may have been deposited as early as 1794, presumably overlies the island's original surface, and it may have protected much of that surface from subsequent disturbance.

Summary of Archeological Mitigation, 1984-1985

Archeological mitigation performed in conjunction with the Ellis Island Restoration Project during late 1984 and 1985 resulted in recovery of significant data concerning: (1) prehistoric resources on the island; (2) the location and footing characteristics of an early nineteenth century military barracks; (3) early nineteenth century alterations in the island's grade; and (4) the location and footing characteristics of the first immigration station's Powerhouse and Tank and Coal House. Mitigation also resulted in the collection of artifacts associated with the second immigration station, in identification of footings deriving from the second station's first incinerator, and in documentation of boiler room alterations in the existing powerhouse. These resources are described briefly in an addendum to this report.

The significant prehistoric resources consist of a shell midden overlying the island's original ground surface beneath the northeastern section of the main building. Human skeletal remains encountered in a previously disturbed context in the same area were most likely once associated with the midden. The barrack's foundation, of brick on a stone footing, was located beneath the eastern part of the railroad ticket office. Evidence for substantial modification of grade during the late eighteenth/early nineteenth century - extensive excavation followed by filling and top-dressing - was discovered below the western part of the railroad ticket office and the northwestern section of the main building. The former Powerhouse and Tank and Coal House footings were located in the vicinity of the existing powerhouse.

Significance of Archeological Resources

The archeological resources discussed above have diverse origins and characteristics, and an assessment of their significance needs to take several factors into account. Foremost among these factors are the island's inclusion, as a nationally significant resource, on the National Register of Historic Places, and the potential that archeological resources there have of contributing significantly to a scientific or humanistic understanding of past human activities.

The island's listing on the register commemorates the establishment in 1892, and the operation until 1954, of the federal immigration station for the Port of New York. The existing structures on the island are architecturally a relatively complete reflection of the development of the second immigration station, and, together with the island's landscape and the furnishings still within the buildings, they constitute the major part of the physical qualities which qualify the island for inclusion on the register. The construction, modifications, administration, and operation of the second station are, in addition, abundantly documented. Archeological resources deriving from the development and operation of the second station are, in contrast, sparse, and there is little likelihood that at the present time they could contribute meaningfully to a scientific understanding of twentieth century activities on the island. Nonetheless, many individual artifacts and some features are directly associated with the second station's workings. For this reason, such resources need to be included, either by statement or by interpretation, with the significant qualities of the site, and adverse effects on them require an appropriate degree of mitigation.

The first immigration station, destroyed by fire in 1897 after five and one-half years of operation, is essentially, as a physical resource, comprised of a set of archeological features and contexts. Furthermore, because documentation regarding the first immigration station is relatively incomplete, archeological data might well provide a basis for research into the physical and operational characteristics of the first station. For these reasons the archeological resources deriving from the first immigration station are, despite previous disturbances, among the qualities which qualify the site for inclusion on the National Register, and they should be so noted on the nomination of the site to the register. Again, any adverse effects on these resources require an appropriate degree of mitigation.

Remnants of late eighteenth and nineteenth century fortifications also remain on Ellis Island. Some, particularly portions of Fort Gibson's rampart and the foundations of its parapet and other structures, are likely to be sufficiently intact, despite previous disturbances, to be interpreted archeologically as an integral part of the system of defenses for the New York Harbor region. Because it was the system as a whole which constituted the military defenses for the region, and which evidently deterred a British attack during the War of 1812, the recognizable components of the system may be viewed as having sufficient regional historical significance, individually or collectively, for their nomination to the National Register of Historic Places. The potential National Register eligibility of archeological resources on the island deriving from the fortifications requires an appropriate degree of mitigation in the event of adverse effects on such resources.

Other non-exogenous archeological resources on the island could also contribute to our understanding of historic and prehistoric human activities there and in the region. This potential, and the significance it confers, are apparent for the prehistoric resources discovered in 1985 during archeological mitigation. The nomination of the site to the register should be amended to include recognition of these resources, and their preservation needs to be among the objectives of the site's managers. Adverse effects on the resources would need to be mitigated. The potential significance of early historic resources cannot presently be demonstrated, but any adverse effects on such resources are also likely to involve adverse effects on demonstrably significant resources. Consequently, the necessary mitigation of these effects would appropriately be extended to include any early historic resources which might be present.

Exogenous archeological resources, which have been deposited on the island together with fill soils and which have origins difficult or impossible to determine, might also contribute to our understanding of past human activities, but again this potential cannot be demonstrated. These resources are, in any case, presumably similar to those in other fill contexts in the region, and there is no basis for viewing them as among the qualities which qualify the site for the register. Adverse effects on these resources alone would not require mitigation. It would, nonetheless, be appropriate for artifacts representative of these resources to be collected in conjunction with the mitigation of adverse effects on resources requiring it.

Recommendations

The presence of significant archeological resources on Ellis Island requires that the site be managed with due attention to their preservation, in accordance with applicable regulations and policy. It is of particular concern that adverse effects on these resources -- disturbance or destruction of them and of their physical interrelations -- be avoided wherever possible, or appropriately mitigated where avoidance is not possible. Preserved along with the resources is their potential contribution to research aimed at increasing our knowledge of past human activity on the island and in the region generally. Also preserved is a material basis for interpreting these past activities for the benefit of park visitors.

Rather than reiterate where, and at what depths, significant resources would likely be encountered and disrupted, I suggest that any specific ground disturbances other than the most superficial will require an assessment by an archeologist to determine their potential effects and the mitigation appropriate for adverse effects. It is possible, however, to delineate the characteristics of ground disturbances which would be very unlikely to have adverse effects, and which would therefore not require mitigation:

1. Disturbances in any area consisting entirely of fill deposited subsequent to c. 1920;

2. Disturbances on Islands 2 and 3 in any area not formerly the site of a structure;

3. Disturbances on Island 1 in areas, and to depths, entirely disrupted due to documented, post-1897 construction activities;

4. Disturbances on Island 1, to depths of 2 feet or less below exterior grade, in any area not formerly the site of a structure;

5. Disturbances on Island 1, to depths of 1/2 foot or less below exterior grade, in any area; and

6. Disturbance on Island 1, in basement areas, to depths of 1/2 foot or less below the surface of existing basement floor slabs.

It must be noted, and contractors must be advised, that artifacts and unanticipated features encountered in the course of ground disturbances which are not monitored need to be reported to park staff, and significant artifacts need to be turned over to park staff.

In any specific situation wherein the question of actual or potential effects on archeological resources arises, an archeologist needs to be consulted before the disturbance proceeds. Under most circumstances, narrow linear disturbances (trenches), small area disturbances (pits less than roughly 5 feet square), and relatively shallow disturbances below exterior grade (2 to 3 feet deep), would be appropriately mitigated, if necessary, by means of archeological monitoring. Disturbances of extensive areas to depths at which significant resources may be encountered should again, if possible, be avoided. If unavoidable, such disturbances would need to be mitigated by prior test or salvage excavations. The planning and performance of all mitigation would need to reflect adherence to appropriate professional standards.

One of the archeological resources of Ellis Island has not been considered in this overview and assessment, although passing mention was made of it. The sunken ferry boat Ellis Island, resting on the bottom of the ferry basin's west end, could possess sufficient archeological integrity to warrant some measure of underwater archeological investigation or salvage. An assessment of her integrity and significance should be undertaken by archeologists and historians with the expertise for this task.

APPENDIX

IDENTIFICATION OF FAUNAL REMAINS
1984 SURVEY AND TEST EXCAVATIONS
ELLIS ISLAND

by
Larry W. McKee
Old Dominion University
Norfolk, Virginia

Provenience	Number	Description
Survey:		
Isl. 1, Area H	2	medium-sized mammal rib frags.
" " S	3	unidentifiable mammal bone frags., burned
" " W	1	medium-sized bird long bone frag.
" " GG	1	medium-sized bird scapula (now in two pieces)
" " XX	1	medium-sized mammal rib, burned or weathered, cleanly chopped or sawn
" " YY	6	medium-sized mammal ribs, most with clean saw or cleaver marks
	1	medium-sized bird vertebra
	1	*Bos taurus* (?) femur head, thin fragment sawn at both ends
	2	*Sus scrofa* (?) vertebrae frags., sawn
	1	*Bos taurus* (?) long bone frag., sawn at either end
	1	*Sus scrofa* (?) long bone diaphysis frag.
	1	medium-sized mammal coccygeal vertebra
	1	medium-sized bird long bone frag.
Isl. 2, Area K	1	unidentifiable bone frag, with patina which indicates it might be a tool frag.
" " T	1	medium-sized mammal rib frag.
Isl. 3, Area N	1	unidentified mammal bone, burned or weathered
" " O	1	large bird vertebra

APPENDIX CONT.

Provenience	Number	Description
Test Excavations Island 1:		
Area 1, Stratum B	1	*Sus scrofa* metapodial frag., rodent chewing
	1	medium-sized mammal rib frag.
	2	unidentifiable mammal bone frags., burned
	14	unidentifiable mammal bone frags.
" " C	2	large mammal vertebra
	1	rodent femur
	1	medium-sized bird humerus
" " D	1	burned medium-sized mammal (?) rib, burned
	2	large mammal long bone frags.
Area 2, Stratum A	2	unidentifiable bone frags. (turtle?)
" " B	1	medium-sized bird long bone
	1	medium-sized bird coracoid (now broken)
	1	small bird (juvenile gull?) humerus
	1	*Bos taurus* molar
	1	*Bos taurus* ulna, sawn
	1	medium-sized mammal rib frag.
	1	medium-sized mammal rib frag., chewed
	1	medium-sized mammal ulna, chewed
	11	unidentifiable mammal bone frags.
" " C	1	medium-sized mammal rib cleanly chopped or sawn
	1	medium-sized mammal ulna (pig?)
	1	medium-sized mammal radius (pig?)
	1	large mammal ulna
	1	unidentifiable mammal bone frag., chewed
" " D	1	turtle shell plate fragment
" " E	1	medium-sized mammal rib
	1	*Bos taurus* rib, sawn
	1	unidentifiable mammal bone

NOTES:

-- Medium-sized birds are probably chicken, although they could be some kind of shore bird or other wild species.

-- Medium-sized mammals: pig, deer, goat, sheep, dog sized animals.

-- Question marks after species indicate a fragment which is not diagnostic enough to make a final judgement.

ADDENDUM

ARCHEOLOGICAL MITIGATION
ELLIS ISLAND RESTORATION PROJECT
1984 - 1985

Introduction

The existence of significant archeological resources on Ellis Island, and the potential for disturbance of these resources during implementation of the Ellis Island Restoration Project, together indicated that archeological mitigation would be required. To determine which elements of the project might affect significant resources, and to begin planning for mitigation of anticipated adverse effects, DSC Staff Archeologist John Pousson began reviewing construction drawings in September, 1984. In August, 1984, a preliminary plan for mitigation was prepared and sent to Judson Ball, DSC Team Captain for the project. The recommendations basically consisted of:

1. Minor modification of the landscape design north of the main building's east wing so as to reduce the likelihood of effects on resources in that area;
2. Archeological test excavations below the railroad ticket office (at the north side of the main building) and adjacent to the east end of the main building, to locate and acquire data concerning probable resources in these areas; and
3. Archeological monitoring of construction excavations in other areas where there was some potential of adverse effects on resources.

Because unanticipated resources could turn up even in construction excavations which did not appear to require monitoring, it was further recommended that an archeologist be available to expeditiously assess and document such resources should they be encountered.

In October, 1984, without prior notification to archeological staff, an engineering test excavation was made at the west side of the powerhouse. This excavation exposed what was evidently a brick footing of the former Tank and Coal House (1892-1900). Although it was not possible to document this feature precisely, arrangements for shifting the excavation away from the initial location minimized adverse effects. Subsequently, the construction project managers were reminded of the need for appropriate archeological mitigation. Beginning in December, 1984, provision was made ahead of time for archeological monitoring, at first for engineering test excavations beneath the railroad ticket office, and subsequently for other ground disturbances in various areas of the island.

The purpose of this addendum is to provide brief descriptions of the ground disturbances and of the resources encountered through the end of 1985, together with the basic findings of a limited amount of additional archeological testing performed below the main building and the railroad ticket office during the summer of 1985. The resources -- features, strata, and artifacts -- derive from military use of the island (1797-1890) and from the first immigration station (1890-1897) as well as from earlier years of the second immigration station (1898-1954). Prehistoric resources, reflecting use of the island by Native Americans prior to c. 1600, were also discovered, and this was one of the reasons for the additional archeological testing. For convenience, the areas where disturbances and testing have occurred are the basis for organizing this summary, rather than the chronological sequence of disturbances or the resources' origins. A more analytical approach will be taken in the final report on the entire program of archeological mitigation, which will be prepared when the ground disturbances are concluded in 1987.

Powerhouse Interior

A series of engineering test excavations were made within the existing powerhouse during the winter and spring of 1985. The purpose was to provide data concerning footings. In the generator room, occupying the southeastern part of the powerhouse, two sets of interconnected trenches were excavated to depths of 3.5 feet around the generator bases. Similar excavations were made in the boiler room at the west side of the powerhouse, adjacent to the bases of boilers and machinery footings (Figure A-1). During the 1901 construction of the powerhouse, the area of its interior was probably entirely excavated to a considerable depth, for placement of piles and construction of grillage more than 8 feet below the building's present floor. Strata and features earlier than the powerhouse are therefore unlikely to remain intact beneath it.

No significant resources were encountered under the tile and concrete floor of the generator room. A layer of cinders was located directly below the floor, overlying yellowish brown sandy loam fill. Within the fill towards the south edge of the room, between approximately 16 and 27 feet west of the southeast corner, was a large deposit of terra-cotta construction block fragments. Architectural artifacts (nails, iron strap and plate fragments, arc-light carbon, electrical fixture fragments, etc), as well as fragments of ceramics and bottles, were present within the excavations. The generator footings were found, below the floor, to be constructed of stone.

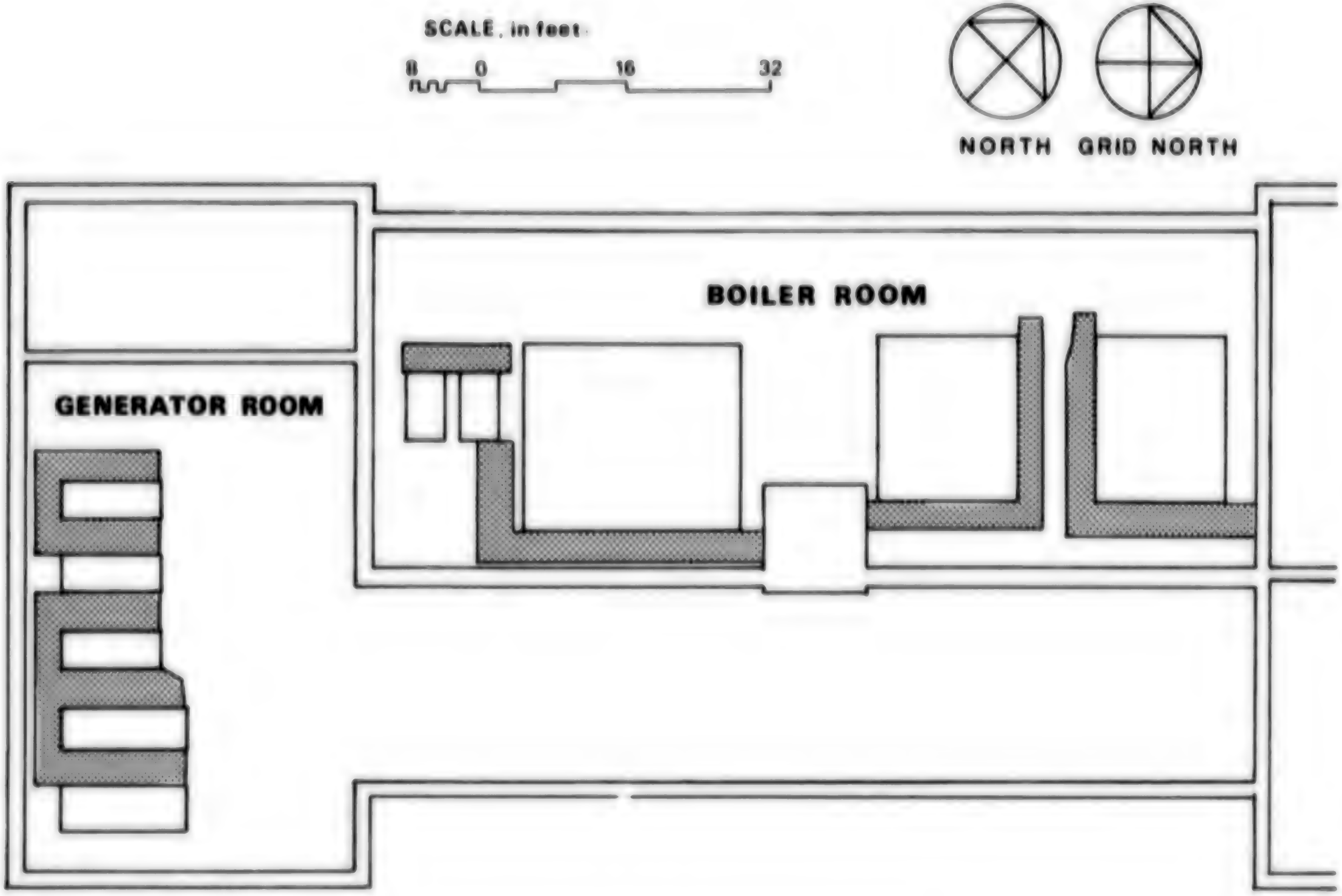

FIGURE A-1. ENGINEERING TEST EXCAVATIONS
POWERHOUSE
ELLIS ISLAND

▨ excavations

A more complex array of features was encountered beneath the boiler room, all of which evidently derive from footings associated with the existing structure, specifically with present and former boilers. It was apparent that disruptions to strata and features accompanied modifications made within the boiler room (most significantly, the c. 1932 conversion from coal to oil-burners). The origin of the features encountered was most evident at the east and south edges of the northernmost boiler. A concrete coated brick pier or wall footing, roughly 3.5 feet wide, was located at the northeast corner of this boiler, with a surface at floor level and a depth in excess of 1.7 feet. A stone footing, at least 2.5 feet wide, extended south from this pier within the eastern three-quarters of the trench, and connected with a west running stone footing, 2.5 feet wide, between 11 and 13.5 feet south of the boiler room's north wall. These footings correspond with the southeast corner of the former northernmost boiler. The northeast corner of another former boiler, directly to the south, was reflected by remnants of stone footings extending south and west at the southeast corner of the existing boiler.

In the segment of the trench along the south side of the existing boiler, the second west running stone footing (the north footing of the former second boiler) was found extending beneath the boiler up to a concrete pier (?), 3.5 feet wide, centered approximately 5 feet west of the boiler's southeast corner. The existing boiler otherwise had a yellow fire-brick footing, topped by concrete. Immediately southeast of the boiler's southwest corner was a disturbed area of yellow brick pavement at a depth of 3.5 feet. This is probably a remnant of the floor of the former second boiler. At the existing boiler's southwest corner was a 2.0 foot square concrete pier, with a surface 2.0 feet below the floor. A 1.5 foot wide red brick wall, topped with concrete, extended south from this pier at a depth of 2.5 feet. These may also be remnants of the former second boiler.

Exterior Areas, Powerhouse Vicinity

A number of construction excavations occurred in the vicinity of the powerhouse during 1985. In late winter, a long, angling trench, 2.5 to 3.0 feet in width and depth, was excavated west and north of the powerhouse, for installation of a temporary oil line. Several late nineteenth and early twentieth century features were exposed in this trench, as described below.

During the spring and summer, a large, deep pit for permanent oil tanks was excavated northwest of the powerhouse. Timbers and piles from former docks were located in the southeastern quarter of this excavation. The fill from this excavation, which below 1 to 2 feet of clay loam and sand consisted almost entirely of cinders, contained a moderate quantity of institutional ceramic and bottle fragments, together with architectural artifacts and a few large pieces of iron machinery. The fill dates to the 1920s and 1930s.

East of the powerhouse, engineering test excavations made in April and July to investigate the footings of the water towers exposed structural remnants of an earlier powerhouse (1891-1901). At the northwest leg of the south water tower, brick and concrete footings were encountered 1.5 feet below grade, while at the north leg of the same tower, a former interior wall foundation, of brick, was located between 1.6 and 4.0 feet below grade. At the south leg of the south water tower, the upper 5.5 feet of soil consisted of loamy fill mixed with rubble. Below this, down to the water table at 8.0 feet below grade, were several layers of sand which may derive from early nineteenth through mid-nineteenth century episodes of filling at the northwest end of the original island. The excavations in the vicinity of the powerhouse are indicated on figure A-2.

The first feature encountered in the long oil line trench was the outer wall of a former bulkhead, located 0.5 foot below grade between 1 and 3.5 feet west of the Bakery and Carpentry Building's west wall, and skewed somewhat east of grid north. This wall was constructed of overlapping horizontal timbers roughly 0.7 to 0.9 foot square. The bulkhead was originally constructed c. 1891, and rebuilt (and possibly raised) c. 1904. With the exception of the incinerator dock, the area west of the bulkhead was not filled until the 1920s and 1930s, and the stratigraphy there is not significant. One 0.7 foot diameter pile was located adjacent to the west face of the wall at a depth of 2.2 feet. Although a vertical stratigraphic break was noted about 21 feet to its east, it is unclear if this was associated with the bulkhead, which evidently was designed to be about 15 feet wide in this area. The stratigraphy east of the bulkhead was otherwise only recorded with photographs, and the soil characteristics are not clear.

Several more features were located in the trench segments immediately east and north of the powerhouse. The most significant of these were two brick piers deriving from the former Tank and Coal House (1892-1900) and the concrete base of a former incinerator (1901-1911).

The upper part of the brick piers, 2.35 foot square, located between 0.2 and 2.7 feet below grade 15 feet west of the powerhouse, were designed to have been built atop 5 foot square concrete pile caps,

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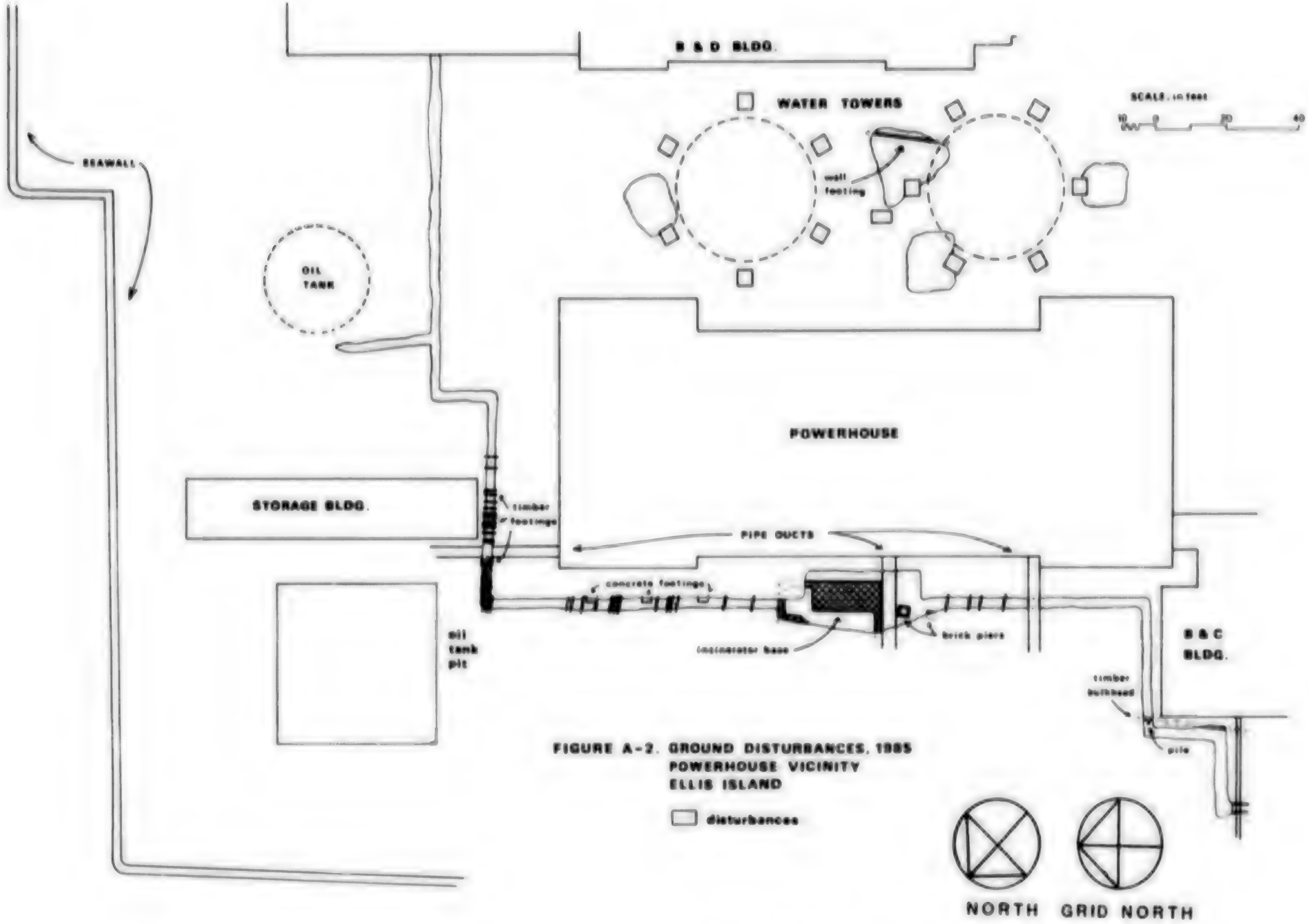

FIGURE A-2. GROUND DISTURBANCES, 1985
POWERHOUSE VICINITY
ELLIS ISLAND

which presumably lie below the depth of the trench. Together with the pier previously encountered (as noted in the introduction) near the northwest corner of the south section of the powerhouse, and the former powerhouse's interior wall foundation segment (located east of the existing powerhouse), the two piers provide a basis for a precise overlay of the successive buildings (figure A-3).

The former incinerator base was a massive block of concrete, 8 feet east-west by 20 feet north-south, located between 7 and 15 feet west of the powerhouse, with additional concrete wing walls to the north and west. The surfaces of this feature were located between 0.3 and 1.6 feet below grade. Its characteristics are consistent with two historical drawings of the incinerator, and the concrete block is presumably, as designed, 4 feet thick.

Timber remnants of a former dock (c. 1900?), running east-west but skewed about 8-10 degrees north of grid west, were located along the west side of the powerhouse, north and south of the incinerator base. North-south aligned timber dock remnants were encountered in the east-west trench segment 20 feet north of the powerhouse. The dock timbers were generally found between 1.5 and 2.5 feet below grade.

Three small, pyramidal, concrete footings, likely to have supported an ash conveyer between 1911 and 1932, were located spaced 16 feet apart, and aligned north-south, 7.5 feet west of the north section of the powerhouse. Three pair of horizontal timbers, which may have served as supports for a 1926-1932 coal trolley, were located 10 feet apart (east-west), on top of the dock remnants 20 feet north of the powerhouse. The timbers comprising each of these features were 0.8 to 1.0 foot square, aligned north-south, and spaced about 1 foot apart.

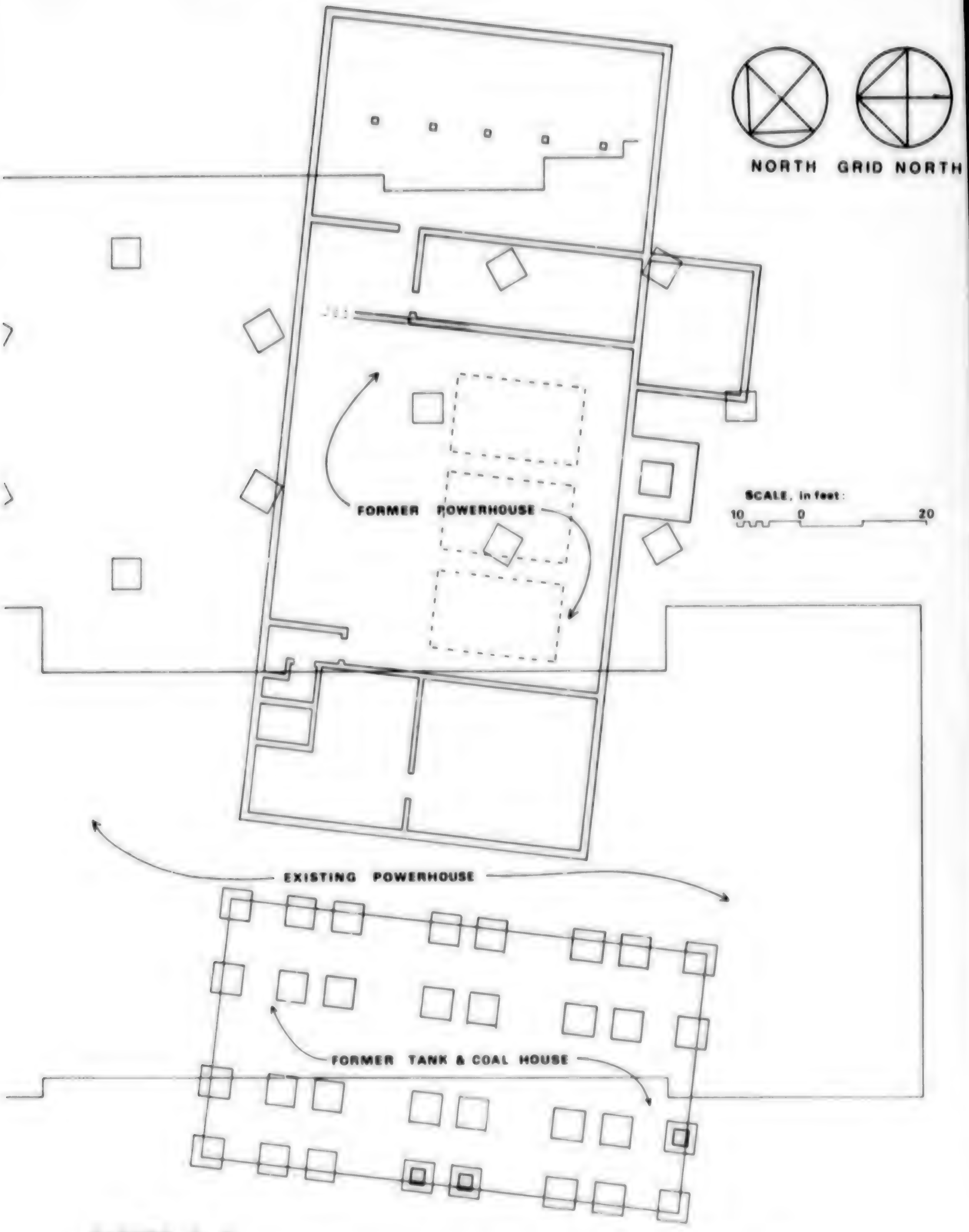

FIGURE A-3.
EXISTING & FORMER STRUCTURES - POWERHOUSE VICINITY

Timbers which may have helped support a ramp at the west doorway of the Baggage and Dormitory Building porch were located 2.0 feet below grade 13.0 and 23.5 feet directly west of the doorway. A number of pipes and concrete pipe ducts were also encountered in the vicinity of the powerhouse, most if not all of which are documented on historical drawings.

Railroad Ticket Office Crawl-space

In December, 1984, two engineering test excavations were made beneath the northwestern section of the railroad ticket office (RRTO). These excavations were archeologically monitored and the stratigraphy recorded. In September, 1985, two archeological test excavations were made beneath the south-central and southeastern part of the RRTO, to determine the potential effects of duct construction. Archeologically informative stratigraphy was present in all these excavations, and significant features were located in the southeastern archeological test. (See figure A-4.) The existing grade of this area is substantially higher than historical grades, and historical strata and features remain relatively intact here. A concrete pavement constructed adjacent to the main building before the RRTO was built in 1904 remains in place in the south half of the crawlspace.

The first of the two engineering tests was a 3.0 by 3.5 foot pit at the south side of the footing for column DD-104. The north half of the pit area consisted of the builders' trench for the footing, while in the south half were four layers of fill, each approximately 0.5 foot thick, overlying a soil layer likely to have been grade between 1892 and 1897. The 1897 fire which destroyed the first station was reflected here by burnt material (stratum D) overlying the 1897 grade,

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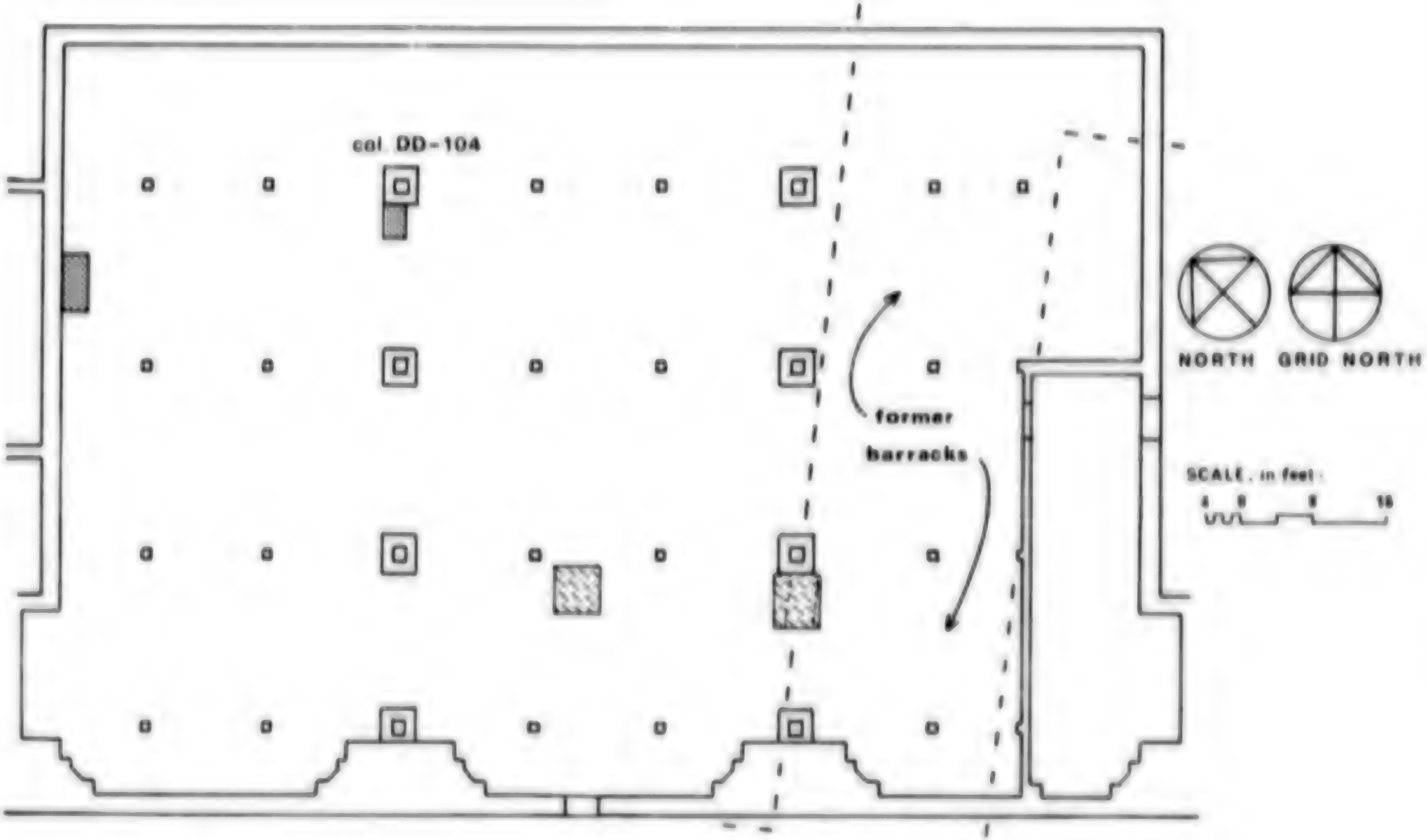

FIGURE A-4. TEST EXCAVATIONS
RAILROAD TICKET OFFICE
ELLIS ISLAND

▨ engineering tests

▒ archeological tests

which was itself darkened with embedded charcoal and ash. (See Table A-1.)

The second engineering test excavation was a trench adjacent to the interior of the west foundation of the RRTO. This trench was excavated to a depth of slightly more than 7 feet, and stratigraphy extending back, most likely, to the early nineteenth century was revealed (table A-1). Among the episodes reflected by the stratigraphy were again the 1897 fire (stratum B), filling associated with construction of the first station (stratum C), filling possibly associated with construction of a Shellhouse immediately west of this area during the Civil War (stratum E), and early nineteenth century filling, construction, and landscaping (strata G and H). The absence of any natural soil horizons within the excavation is possibly due to the removal of soil from this area of the island c. 1800, for use as fill elsewhere. A c. 1800 plan of the island shows an inlet-like feature in the same area which had not been depicted on earlier plans. As described below, a layer of sand similar to stratum H was found directly over the island's subsoil beneath the northwestern part of the main building's basement, the topsoil having been previously removed.

The archeological tests below the south-central and southeastern parts of the RRTO, like the engineering tests, revealed layers of burnt material from the 1897 fire, beneath strata deriving from the 1898-1901 construction of the existing main building, and overlying fill from construction of the first immigration station (table A-2). Of particular significance, however, were the features located in the southeastern test. Resting on stratum D there, which was evidently a temporary grade established by filling when construction of the

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TABLE A-1. STRATIGRAPHY OF ENGINEERING TESTS, RAILROAD TICKET OFFICE — ELLIS ISLAND.

Test Location	Strata	Depths	Characteristics	Probable Origins
Pit at col. DD-104:	A	0.0'-0.5'	Construction debris, cinders, & sandy loam	Material graded following construction of main bldg. (c. 1901)
	B	0.5'-1.0'	Compact, reddish-brown, sandy clay loam	Same as stratum A
	C	1.0'-1.5'	Plaster, stone, and brick rubble	Material wasted during construction of main bldg. (c. 1900)
	D	1.5'-2.1'	Cinders, slag, charcoal, & gray/black loam	Material from demolition of first immigration station (c. 1898)
	E	2.1'-2.3'	Reddish-brown sandy clay loam	Material from construction of first immigration station (c. 1891), grade until 1897.
	F	2.3'-2.6'+	Grayish-brown sandy loam	Grade prior to 1891 (?)
Trench at west wall of RRTO:	A	0.0'-2.6'	Loam, cinders, and construction debris	Materials deriving from construction of main bldg. (1898-1901)
	B	2.6'-2.8'	Ash, charcoal, cinders, & loam	In situ (?) material from 1897 fire
	C	2.8'-3.3'	Reddish-brown sandy clay loam	Same as stratum E, above
	D	3.3'-3.35'	Sandy loam, reddish-brown	1891 (?)
	E	3.35'-5.6'	Sandy clay loam, medium brown & reddish-brown	Fill from construction of c. 1862 shellhouse (?), grade until 1891 (?)
	F	5.6'-5.8'	Cinders, charcoal, & grayish brown clay loam	Mid-nineteenth century grade & stove waste (?)

TABLE A-1. CONT.

Test Location	Strata	Depths	Characteristics	Probable Origins
	G-1	5.8'-6.0'	Grayish-brown silty sand & shell	Early nineteenth century fill
	G-2	6.0'-6.1'	Sandstone spalls, dark red	Masonry waste from construction of Fort Gibson (c. 1794-1812)
	G-3	6.1'-6.4'	Same as G-1, less shell	c. 1800 fill
	H	6.4'-7.2'	Very granular sand & shell light grayish-brown	c. 1800 fill

TABLE A-2. STRATIGRAPHY OF ARCHEOLOGICAL TESTS, RAILROAD TICKET OFFICE — ELLIS ISLAND.

Test Location	Strata	Depths	Characteristics	Probable Origins
South-central area of RRTO:	A	0.5'-1.1'	Cinders and loam	Material deposited following construction of main building (c. 1901)
	B	1.1'-3.8'	Plaster & mortar in east half of test	Material wasted during construction of main bldg. (c. 1900), mixed at base with fill of modern drainage line trench in east half of test
	C	1.1'-3.3'	Terra cotta block & brick frags. & med. brown clay loam	Same as stratum B, mixed with material from demolition of first station (cinders & charcoal) at base
	D	3.3'-3.5'	Mottled sandy loam, dark grayish/yellowish brown, & rocks	Fill deposited at beginning of construction of main building (c. 1899)
	E	3.5'-3.8'	Compact yellowish brown silty loam	Same as stratum D (c. 1898)
	F	3.8'-3.95'	Cinders, charcoal, & dark grayish brown sandy silt loam	Ground surface during fire of 1897
	G	3.95'-4.4'	Medium brown sandy silt loam	Fill deposited during construction of first immigration station (c. 1891)
	H	4.4'-4.7'+	Reddish brown sandy silt loam and mortar	Pre-1891 fill
Southeastern area of RRTO:	A	0.5'-1.1'	Cinders	Same as stratum A, above
	B	1.1'-1.3'	Terra cotta block frags. & med. brown clay loam	Same as strata B & C, above
	C	1.3'-2.8'	Limestone spalls	Masonry waste from construction of main bldg. (c. 1899)

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TABLE A-2. CONT.

Test Location	Strata	Depths	Characteristics	Probable Origins
	D	2.8'-2.9'	Compact yellowish brown sandy loam & brick & mortar frags.	Same as stratum D, above; overlies foundation of building demolished c. 1898
	E	2.9'-3.25'	Reddish brown silty sand	Same as stratum E, above
	F	3.25'-3.35'	Charcoal, cinders, etc.	Same as stratum F, above
	G	3.35'-3.7'	Same as stratum G, above	Same as stratum G, above
	H	3.7'-3.9'	Same as stratum H, above	Same as stratum H, above
	I	3.9'-4.0'	Plaster	Continuous with plaster on foundation of building constructed c. 1798

existing main building began, were remnants of three railroad ties. These ties presumably supported an east-west running segment of the rail-line which contemporaneous photographs indicate was employed during construction. A earlier and more massive feature -- a 2.05 foot wide brick foundation -- was found partially covered by stratum D. The foundation derives from a structure built initially as Fort Gibson's barracks (c. 1798), and later adapted for use as a shellhouse (c. 1862) and as the first station's detention building (1891). The building was destroyed by the 1897 fire. The foundation rested on a large stone footing at a depth of 4.0 feet. Plaster on the west face of the foundation (the only side exposed), which was charred above the 1897 ground surface (stratum F), extended over the stone footing and into fill soil at the west edge of the excavation. The plaster may be original to the building, and marks what was probably the initial post-construction grade to its west.

Main Building Basement

In April, 1985, engineering test excavations were made at four columns in the basement of the main building. Human skeletal remains (2 humeri and other bone fragments, including skull fragments) were encountered within the disturbed soils surrounding one of these columns (column S-36, in the northeastern part of the building). These remains are likely to derive from prehistoric burials on the island. At the same column, a shell midden was evident towards the east and west margins of the excavation, between 2.6 and 3.7 feet below the basement floor. Screening of a large portion of the backdirt from the excavation resulted in recovery of more human bone fragments and of a few fragments of late prehistoric pottery. Partly as a consequence of these findings, archeological testing was performed in the main building basement in July-September, 1985, as described below. (Figure A-5.)

The engineering test under the southeastern part of the main building (at column H-32) revealed, between 1.5 and 3.0 feet west of the column, largely if not entirely displaced structural masonry (stone, brick, mortar, and concrete), at depths of from 0.85 to 3.5 feet. The masonry derives partly from early to mid-nineteenth century military structures and partly from the foundation of the first immigration station's main building. Only fill soils associated with construction of the existing main building were revealed in the two engineering tests beneath the western part of the main building (at columns S-3 and J-5).

The initial archeological test excavation in the basement was made between columns S-34 and S-36, near where the human bone was recovered and the apparent shell midden revealed. The stratigraphy discovered below the basement floor, which consists of one-half foot of concrete with an embedded tar layer, is summarized in table A-3. Below material deriving from construction of the main building were several layers of fill (strata B-1, B-2, C, and D) which had probably been placed in the area during construction of Fort Gibson (c. 1800). These strata contained late eighteenth century historical artifacts as well as a few prehistoric artifacts. Beneath the fill was the upper portion of a prehistoric shell midden (stratum E), which had evidently remained the ground surface at this location into the historic period. An unidentified iron object was present on the stratum's surface, but it otherwise contained only prehistoric artifacts (flakes and pottery fragments). A lower portion of the shell midden (stratum F), which contained a greater frequency of whole shell, bone fragments, and artifacts, was located extending to the same depth as the island's present water table (about 3.5 feet below the floor). Moderate quantities of prehistoric artifacts and bone, but very little shell, were found in the very dark grayish brown/black silty clay (stratum G) underlying the midden. This soil was presumably the original, natural surface of the island here, and was found to grade into the underlying subsoil, a medium brown silty clay within which were naturally occurring boulders. Strata E, F, and G clearly reflect prehistoric utilization of Ellis Island, and are significant for the contribution they might make our understanding of that utilization. The human remains discovered in the construction excavation at column S-36 had probably been associated with one of these strata prior to construction of the main building.

The next archeological testing performed in the basement consisted of soil augering at 18 locations (figure A-5), with a 1-inch diameter screw auger, to determine the extent and depth of significant archeological contexts, particularly that of the prehistoric midden previously discovered in the vicinity of column S-36. The information provided by augering is summarized in table A-4. The shell midden was found intact in only one additional location, that of core 5 southwest of column S-36. It is likely, however, that the midden is present in other areas at a depth greater than was sampled by augering (e.g., below the northeastern margin of the basement). Extensive deposits of historical fill were clearly evident, and a few historical and modern features were also encountered. A concrete pavement (?) was discovered

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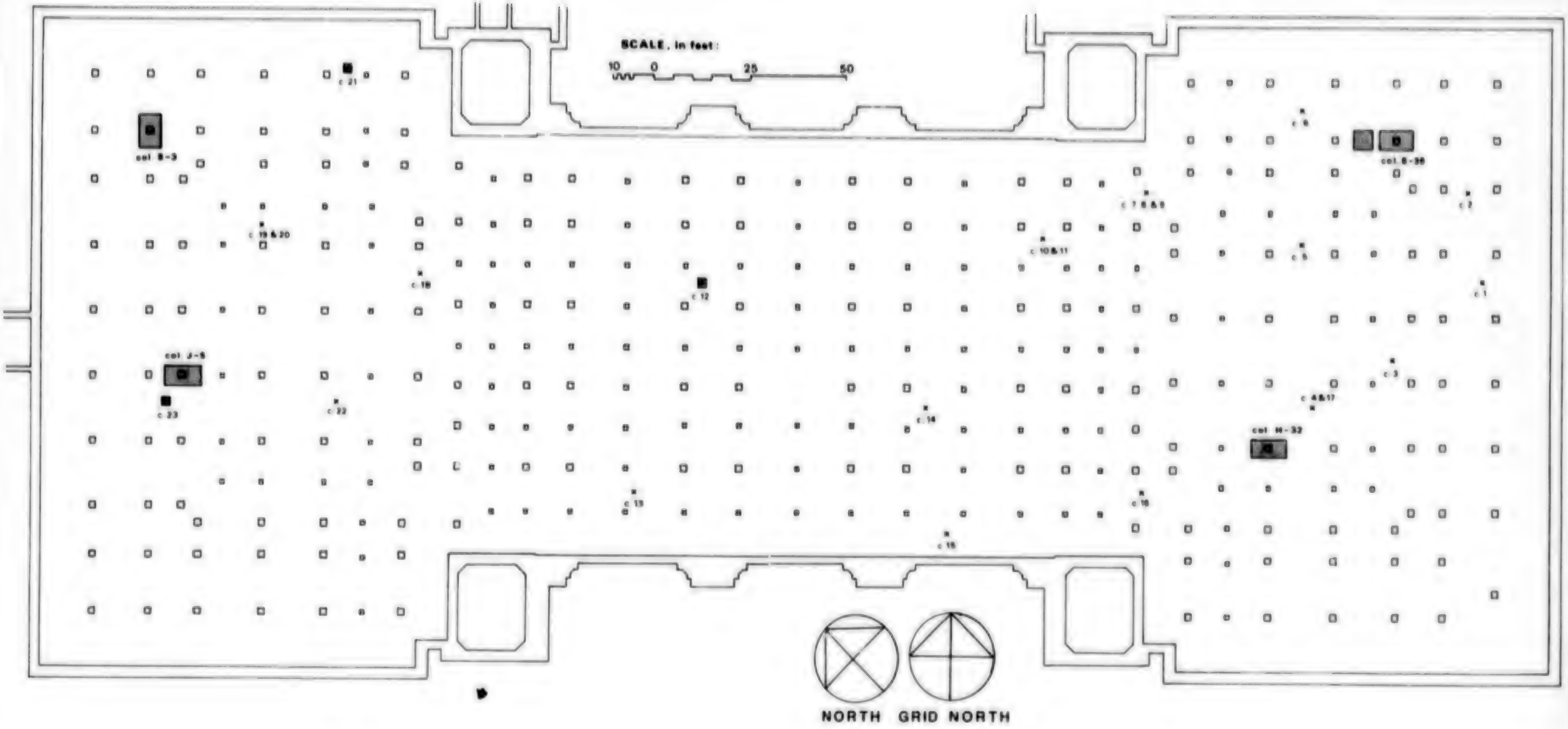

FIGURE A-5. TEST EXCAVATIONS & CORES
MAIN BUILDING BASEMENT
ELLIS ISLAND

▨ engineering tests
▨ archeological tests
× coring locations

TABLE A-3. STRATIGRAPHY OF ARCHEOLOGICAL TEST NEAR COLUMN S-36, MAIN BUILDING BASEMENT -- ELLIS ISLAND.

Strata	Depths	Characteristics	Probable Origins
A	0.5'-0.9'	Construction debris & mottled, reddish & grayish brown sandy loam	Material graded during construction of main building (c. 1900)
B-1	0.9'-1.75'	Light to med. brown granular sand, shell frags., and gravel	Fill deposited during construction of Fort Gibson (1794-1812), disturbed during construction of main building
B-2	1.75'-2.3'	Like stratum B-1, but slightly silty, and with both gravel and cobbles	Same as stratum B-1, undisturbed
C	2.3'-2.45'	Medium to dark brown silty sand and shell frags., less stone	Same as stratum B-2
D	2.45'-2.7'	Light to med. grayish brown sand & shell frags.	Same as stratum B-2
E	2.7'-3.0'/ 3.5'	Mostly whole oyster shell in matrix of very dark gray/black sandy silt	Prehistoric shell midden, pre-1600 in origin, at grade into the historic period (until c. 1794?)
F	3.0'/3.5'- 3.2'/3.7'	Large, whole oyster shell in matrix of very dark gray/black silty clay	Prehistoric shell midden, pre-1400 in origin ?
G	3.7'-4.05' (south 1/2 of test)	Very dark grayish brown/black silty clay, little shell, some rocks	Original, natural surface soil of area, with an embedded prehistoric midden, c. 1200 in origin ?
H	4.05'-4.4' (south 1/2 of test)	Medium brown silty clay loam and boulders	Natural subsoil of area (glacial till)

TABLE A-4. FINDINGS OF SOIL AUGERING, MAIN BUILDING BASEMENT -- ELLIS ISLAND.

Core No.	Location	Findings
1 & 2	East side of east wing	Sand & fragmented shell fill to depth of 5.0'+
3	SE of center of east wing	Redeposited midden (?) used as fill immediately below floor; sand/shell fill to 5.25'; subsoil at 5.25'; lens of lime or decayed shell at 2.0'
4	SW of center of east wing	Sand/shell fill to 4.25'; subsoil between 4.25' and 5.0'+
17	Same as 4	Sand/shell fill to 2.0'; partial void between 2.0' & 3.0'; sand/shell from 3.0' to 3.5'; obstruction at 3.5'
5	NW of center of east wing	Concrete pavement extending west-northwest/east-southeast directly below floor; sand/shell fill to 3.0'; prehistoric shell midden from 3.0' to 4.0'; original surface soil from 4.0' to 4.5'; subsoil at 4.5 feet
6	North side of east wing	Modern drainage line immediately below floor; sand/shell fill to 5.0'+; lens of gray clay at 2.5'
7, 8, & 9	NW area of east wing	Clean sand, lime, mortar, gray clay, & voids over obstructions at depths of between 2.0' & 3.5'
10 & 11	NE area of center section	Top of concrete utility tunnel wall extending northeast/southwest directly below floor; dark brown loam over obstructions at 2.0' (NW, inside the tunnel) & 2.65' (SE)
12	NW of middle of center section	See Table A-5
13	SW area of center section	Dark brown sandy loam to 1.5'; med. brown silty clay from 1.5' to 3.0'; grayish brown sandy clay and shell over obstruction at 3.75'
14	SE of middle of center section	Similar to core 13; below 3.5', grayish brown sandy clay and shell over obstruction at 4.0'
15	SE area of center section	Various sand/shell fill soils to 3.25'; sandy silt & shell from 3.25' to 3.75'+

TABLE A-4. CONT.

Core No.	Location	Findings
16	SW area of east wing	Dark brown loam & shell to 2.25'; med. brown sandy clay loam shell from 2.25' to 3.0'; med. brown sandy clay from 3.0' to 4.0' (fill?)
18	East side of west wing	Paving stone, 0.45' thick, extending northwest/southeast immediately below floor; chunks of concrete adjacent to southwest side of stone to 1.15'; dark brown loam from 1.15' to 2.0'; subsoil from 2.0' to 3.75'+
19 & 20	North of center of west wing	Lime mortar from 0.6' to 0.8'; dark brown sandy loam from 0.8' to 1.5'; loose sand & shell over obstructions at 2.5'
21 & 23	West wing	See Table A-5
22	SE of center of west wing	Dark brown loam to 2.5'; subsoil from 2.5' to 3.5'+

immediately below the floor at the location of core 5 which may reflect the former presence in that area of an 1890s restaurant kitchen, adapted from a c. 1854 magazine building. A modern drainage line was found at the location of core 6, and the concrete wall of an 1890s utility tunnel was revealed at the location of cores 10 and 11. A paving stone was found at core 18. Some of the soils and construction materials encountered at other locations, such as at cores 4 and 7, may also be associated with features, although this could not be determined by augerinq. Layers of lime mortar located at cores 12 and 19 presumably reflect historical construction activity in that vicinity, possibly the c. 1862 construction of a shellhouse directly to the north.

Humic soils likely to have been historical ground surfaces were found beneath the layers of mortar at cores 12 and 19, and at several other locations as well (i.e., cores 13, 14, 16, 18, 21, 22, and 23). To further assess the integrity and significance of these apparent former surface contexts, small archeological test excavations (2.5 foot square) were made at cores 12, 21, and 23. The stratigraphy of these excavations is summarized in table A-5. Comparable stratigraphy was present at cores 12 and 21. At core 21, two layers of humic soil (strata B and D) were found separated by a thin layer of medium brown sand and sandy loam (stratum C). The higher of these strata, judged by the ceramic fragments it contained (primarily whitewares), was probably at grade in the latter half of the nineteenth century, while the lower (containing ceramics such as creamware, pearlware, and annularware) was evidently of early nineteenth century origin. Stratum C at core 21 is probably analogous to, if not contemporaneous with, the layer of lime

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TABLE A-5. STRATIGRAPHY OF ARCHEOLOGICAL TESTS AT CORES 12, 21, AND 23, MAIN BUILDING BASEMENT — ELLIS ISLAND.

Location	Strata	Depths	Characteristics	Probable Origins
Core 12:	A	0.6'-0.85'	Construction debris & loam	Main building construction (c. 1900)
	B	0.85'-1.0'	Lime mortar, light brown	Construction c. 1862 of shellhouse ?
	C	1.0'-1.65'	Dark brown silty loam	Top-dressing deposited during construction of Fort Gibson (c. 1800), grade until 1862
	D	1.65'-2.4'	Granular sand & shell frags., grayish brown	Fill deposited during construction of Fort Gibson (c. 1800)
	E	2.4'-2.7'	Medium to dark grayish brown silty clay	Slightly humic soil development at surface of subsoil exposed by excavation c. 1800
Core 21:	A	0.6'-0.95'	Construction debris & loam	Same as stratum A, above
	B	0.95'-1.3'	Dark brown silty loam	Loam fill deposited during construction of shellhouse c. 1862 ?
	C	1.3'-1.4'	Medium brown sandy loam	Construction of c. 1862 shellhouse ?
	D	1.4'-2.1'	Dark brown silty loam	Same as stratum C of core 12
	E	2.1'-2.6'	Granular sand & shell frags., grayish brown	Same as stratum D of core 12
	F	2.6'-2.85'	Medium brown silty clay	Subsoil of area lacking a natural surface soil due to excavations made c. 1800
Core 23:	A	0.6'-0.75'	Construction debris & loam	Same as stratum A, above
	B	0.75'-0.9'	Dark brown sandy silt loam	Remnant of top-dressing deposited following construction of first immigration station (c. 1892)
	C	0.9'-1.3' (north part of test)	Very dark brown sandy loam and shell	Historically disturbed (redeposited?) surface soil containing both historic & prehistoric artifacts, grade until 1891?

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mortar (stratum B) overlying a single layer of humic soil (stratum C) at core 12. This humic soil, like stratum D at core 21, also appears to have originated in the early nineteenth century, containing as it did primarily various types of redware. Beneath these strata was a layer of coarse sand and shell fill (stratum D at core 12, stratum E at core 21), which in each of the two tests yielded a large fragment of water-worn redware. The presence of this fill indicates that the overlying humic soils are likewise artificial in origin. They were probably deposited as top-dressing shortly after the sand/shell fill. (The fill is probably identical and continuous with stratum H of the engineering test at the west edge of the RRTO, and the overlying strata may correspond with stratum G of the same test.) At the core 12 test, a thin layer of grayish brown silty clay containing fragments of brick, redware, and bone (stratum E) was found between the sand/shell fill and the subsoil, while at the core 21 location the fill rested directly on subsoil.

In the test excavation at the core 23 location, a remnant of what had probably been the area's surface soil during the 1890s (stratum B) was found over two laterally distinct components. In the center and south of the test was a silty sand and shell filled builders' trench, most likely associated with the north foundation of the first immigration station's main building, which is estimated to be 3 or 4 feet south of the test location. In the north of the test was a very dark brown sandy loam (stratum C) containing a few historical ceramic fragments (yellow-ware, redware) together with several prehistoric artifacts (flakes), as well as oyster shells and shell fragments. Below this was a very dark grayish brown silty loam (stratum D) containing flakes, rocks (some fire-cracked), and cobbles, but very little shell. This stratum graded into the island's subsoil (stratum E), and is presumably a remnant of the area's original, natural surface.

Generally, the archeological testing in the basement of the main building confirmed that relatively intact historic and prehistoric contexts, and several historical features, remain below the basement floor. The prehistoric shell midden beneath the northern part of the east wing, and the artifact bearing soil below it, which is presumably the island's original surface, are especially significant due to their potential for providing important data regarding prehistoric activities on the island. While the full extent of these contexts remains undetermined, one of the soil cores indicated their presence 30 feet south of columns S-34 and S-36, the location of their initial discovery. Another prehistoric context, likely to have been almost completely destroyed except in certain small areas, and not found to contain diagnostic artifacts, was discovered below the west wing, at the location of core 23.

The artifacts contained in the early nineteenth century contexts at the locations of cores 12 and 21 are important primarily because of temporal data they provide concerning modifications of the island's grade. Their interpretive value is otherwise limited, because many of them may derive from somewhere other than Ellis Island, having been incorporated within fill soils possibly brought to the island from elsewhere.

Other Ground Disturbances

The few other ground disturbances associated with construction activities on Ellis Island during 1985 had no appreciable effects on significant archeological contexts or features, but they did result in the collection of additional artifacts.

Demolition of the concrete floor and footings of a former porch exterior to the south side of the main building's center section, and grading of soils below the floor at the east and west ends of the area, disrupted only previously disturbed fill soils (dark grayish and reddish brown loam laden with cinders and construction debris). This work took place in February, 1985. Several whole c. 1900 bottles contained in the fill were collected, along with fragments of ceramics and other artifacts.

Augering for installation of temporary light poles along the seawall of island 1, and shallow trenching to and between these poles, likewise only disrupted c. 1900 or later fill soils. Again, however, a number of artifacts were collected. This work was performed intermittently from spring through fall, 1985. A concentration of artifacts was located in a spur trench between 5 and 20 feet grid west of the northwest corner of the Bakery and Carpentry Building, an area of c. 1935 fill. The artifacts were found in a dark gray, ashy matrix between 2.0 and 3.5 feet below grade, and consisted largely of bottles and bottle fragments, together with fragments of institutional and other ceramics and medical/laboratory items (graduated cylinder and beaker fragments, a syringe, etc.).

Two trenches were dug in an area roughly 150 feet grid north of the Railroad Ticket Office and a similar distance east of the Baggage and Dormitory Building; each trench was approximately 4 feet wide, 3 feet deep and 50 feet long (north-south). These trenches revealed construction materials (including several large concrete slab fragments and structural iron) within fill soils. Also located, at a depth of from 1.75 to 2.0 feet below grade, was a compact layer of cinders. No significant varieties or concentrations of artifacts were encountered in these trenches.

Excavation of a 1.0 foot wide, 1.5 foot deep trench adjacent to the east end of the seawall south of the main building revealed only fill consisting of cinders and gravel and containing very few artifacts.

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Publication services were provided by the graphics and editorial staffs of the Eastern Team, Denver Service Center.

Publication No. D-39

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